California Regional Water Quality Control Board
Santa Ana Region

August 22, 2003

**ITEM:** 17

**SUBJECT:** Public Hearing, Orange County Municipal Storm Water Permittees' Model Water Quality Management Plan (WQMP)

**DISCUSSION:**

On January 18, 2002, the Santa Ana Regional Water Quality Control Board (Board) adopted Order No. R8-2002-0010, NPDES No. CAS618030, Areawide Urban Storm Water Runoff Permit for Orange County and the Incorporated Cities (OC MS4 Permit). The OC MS4 Permit regulates the discharge of storm water from municipal separate storm sewer systems (MS4) to waters of the U.S. This Board and other Southern California Regional Boards have adopted a number of similar MS4 permits. One of the most discussed issues during the re-adoption process was the requirement for control of pollutants from new/re-development projects. The MS4 permittees are required to develop and implement structural Best Management Practices (BMPs), sized according to the sizing criteria specified in the Permit, or other equivalent control measures to reduce/eliminate the discharge of pollutants from new developments and significant re-developments.

The 1990 OC MS4 Permit and Drainage Area Management Plan (DAMP), a plan developed by the Orange County permittees that describes their storm water program, contained some of the first requirements for the implementation of structural and non-structural BMPs with new development. Owners of new development were required to develop Water Quality Management Plans (WQMPs) that described how storm water and urban runoff would be controlled at the new development through the use of BMPs selected from an existing menu. These BMPs included nonstructural controls like pollutant education brochures for new owners, common area litter control, and street sweeping; and structural controls like apartment complex car wash racks connected to the sanitary sewer, common area runoff-minimizing landscape design, and covers & enclosures for trash bins.

The 1996 MS4 Permit for Los Angeles County, adopted by the Los Angeles Regional Board, required the County to submit Standard Urban Storm Water Mitigation Plans (SUSMPs). The SUSMPs are plans that designate BMPs that must be used in specified categories of development projects. The County submitted SUSMPs, but the Regional Board approved the SUSMPs only after making revisions. The Executive Officer issued the revised SUSMPs on March 8, 2000 and upon appeal, the action was upheld in a precedential decision by the State Board in Order No. WQ-2000-11, on October 5, 2000.

With that precedential decision, the State Board required that the SUSMPs, or its equivalent, be included in all future Phase I MS4 permits. When the Orange County MS4 permittees initiated the renewal of the OC MS4 Permit in September 2000, they stated their desire to adapt their existing WQMP program to meet the requirements of the SUSMP program, rather than abandon the existing program. Additionally, the permittees wanted to be able to make use of 'regional' or 'watershed' based treatment BMPs, some in the form of constructed wetlands for treatment of storm water and urban runoff, to reduce the need for site-by-site or tract-by-tract treatment BMPs.

Over the past one and a half years, the staffs of Irvine Ranch Water District, The Irvine Company and the County of Orange have been discussing with various regulatory entities the possibility of incorporating constructed, treatment wetlands that they refer to as "Natural Treatment Systems" or "NTS", at various points of the Orange County Flood Control District system, throughout central and south Orange County. Board staff has reviewed and prepared comments on a draft EIR for the NTS system.

On March 1, 2003, in compliance with Section XII.B.1 of the OC MS4 Permit, the permittees submitted a copy of the updated WQMP and an updated version of Chapter 7 of the DAMP that addresses New Development and Significant Redevelopment. Furthermore, electronic copies of these documents were posted on the County's storm water web site for public review [Attachment B]. Staff had reviewed the submitted documents and on May 21, 2003 sent a comment letter to the County, as the Principal Permittee, providing a list of discrepancies, deficiencies, and items requiring further clarification in the submitted WQMP and Chapter 7 of the DAMP.

At the July 1, 2003 Regional Board meeting the Model WQMP, the associated documents and a summary of staff's comments were presented as an information item. On July 23, 2003, Orange County staff submitted revised versions of the aforementioned documents along with a letter of response to staff's comments. These documents were posted on the Regional Board website; information on these documents and this hearing were publicly noticed; and, on July 23, 2003, a notice of that posting was sent to the over 200 interested parties who have signed up to be notified by email, of developments in the OC MS4 Permit.

The OC MS4 Permit states that by October 1, 2003, the submitted WQMP must be approved by the Executive Officer as providing an equivalent or superior degree of treatment as structural treatment BMPs at each new development and significant redevelopment or those sized, structural treatment BMPs will be required. The process that must be followed for the approval of submittals under the OC MS4 Permit is identified in Section XIX.1 (Provisions). "All reports submitted by the permittees as per the requirements in this Order for the approval of the Executive Officer shall be publicly noticed and made available on the Regional Board's website, or through other means, for public review and comments. The Executive Officer shall consider all comments received prior to approval of the reports. Any unresolved significant issues shall be

scheduled for a public hearing at a Regional Board meeting prior to approval by the Executive Officer."

Staff requested that public comment be received by August 15, 2003 in the Public Notice and Interested Parties mail-out. Based on comments received to date, there are no significant unresolved issues. As such, the Executive Officer is proposing to approve the Water Quality Management Plan and associated documents, along with any agreed upon revisions, on or prior to October 1, 2003.

This staff report and links to all relevant documents are posted on the Board's website at:

http://www.swrcb.ca.gov/rwqcb8/html/oc_permittee_submittals.html

*Vicki L. Wilson, Director*

# *COUNTY OF ORANGE*

## *PUBLIC FACILITIES & RESOURCES DEPARTMENT*

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July 22, 2003

Mr. Mark Smythe, Chief
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California Regional Water Quality Control Board
Santa Ana Region
3737 Main Street, Suite 500
Riverside, CA 92501-6288

Subject: Response to Comments on Drainage Area Management Plan (DAMP) Section 7 and Model Water Quality Management Plan (WQMP)

Dear Mr. Smythe:

The County of Orange, in cooperation with the Permittees to the Orange County municipal stormwater permit (Permit), Order R8-2002-0010, have reviewed the comments from the Regional Board in the letter dated May 21, 2003 on the DAMP Section 7 and the Model WQMP submitted by the Permittees on February 28, 2003. The Permittees appreciate that Regional Board staff have found the Model WQMP overall to be consistent with the requirements set forth in Section XII.B of the Permit and intend to work closely with Regional Board staff to develop a final Model WQMP that can be approved by the Executive Officer by or before October 1, 2003 as required by the Permit.

The enclosed response addresses both DAMP Section 7 and the Model WQMP, but recognizes that the Model WQMP is the document that must be approved by the Executive Officer and that Section 7 of the DAMP provides additional information on the implementation process for the Model WQMP. A revised Model WQMP and Section 7 of the DAMP are attached.

Most of the comments, in the May 21st letter appear to be either minor editorial or clarification items, or other relatively straightforward comments on specific elements. We have also identified several more substantive issues that often are reflected in multiple comments. To facilitate our response, we have grouped responses to and discussion of similar comments that relate to these key issues in the following section. A summary of the comments and our responses are listed in the second section of this letter. Where the model WQMP or Section 7 has been revised in response to comments, this has been noted.

**Primary Issues**

**1. Evaluation of downstream and cumulative effects and impacts (comments 10, 20, 23, 34 and 36)**

Summary of comments: When identifying pollutants of concern in WQMPs, applicants need to consider all receiving waters, and during the WQMP process Permittees must consider the cumulative effects of build out of the watershed when evaluating if particular projects will contribute to habitat or erosion impacts on receiving waters.

Response: The Permittees agree that impacts to all receiving waters including cumulative impacts within a watershed are important considerations when evaluating the adequacy of a Project WQMP. We believe that the Permittees are best suited to develop the background for considering such impacts, as it is not practical nor efficient for individual Project WQMP applicants to address all regional and jurisdictional water quality concerns and water quality programs. The Permit provides for a comprehensive planning framework for water quality that includes reviewing and updating General Plans and development standards, updating the CEQA review processes, coordinating with the TMDL implementation process, developing Watershed Chapters for the DAMP and conducting other watershed planning processes. These are the most appropriate vehicles for the Permittees to use for comprehensive planning and addressing build-out impacts. These tools will serve as guidance for evaluation of appropriate and necessary BMPs for new development or redevelopment within a watershed. Through development and implementation of the DAMP's Watershed Chapters, and through implementation of their revised CEQA processes Permittees will have more comprehensive tools for evaluation of project impacts and appropriate water quality measures including downstream and cumulative impacts. As the total program is fully implemented, Permittees will have more information to communicate expectations to project proponents during the planning and CEQA phase of the project; and to determine the adequacy of Project WQMPs considering both project-specific and, as necessary, possible cumulative impacts.

For these reasons, DAMP Section 7 has been clarified to indicate that Permittees in reviewing Project WQMP's are to consider cumulative and impacts on receiving waters, and that such reviews will be facilitated through comparison to the Watershed Chapters of the DAMP, (once such chapters become available) and through the enhanced CEQA review process.

**2. Considerations of primary and secondary pollutants of concern in BMP selection (comments 20, 31, 34 and 36)**

Summary of comments: With regard to secondary pollutants of concern, the lack of a downstream impairment for a specific pollutant does not guarantee the secondary pollutant will not cause a problem in the watershed upon build-out.

Response: The intent of the Model WQMP is to require projects to select Treatment Control BMPs from among a number of accepted BMPs categories, and meet the flow or volume criteria for treatment quantity. In addition, the Model WQMP requires that where a project has been determined to result in the discharge of a primary pollutant of concern, the selection of Treatment Control BMPs should focus on those controls that are the most effective for

addressing the pollutants of concern for that project and watershed. The purpose of creating a distinction between primary and secondary pollutants of concern was to recognize the importance of addressing pollutants for which the receiving waters are listed as impaired and to comply with Section XII.B.2.b of the Permit which mandates that projects under the WQMP program not "discharge any listed pollutant to an impaired waterbody on the 303(d) list [that] cause an exceedance of receiving water quality objectives." By creating the preference for focusing selection of BMPs on primary pollutants of concern, the Permittees did not intend to ignore other identified pollutants of concern. The combination of BMPs described within a Project WQMP (Site Design, Source Control, and Treatment Control BMPs) addresses the identified pollutants of concern. The Permittees recognize that oftentimes, pollutants of concern are addressed by Treatment Control BMPs, but the Permittees also recognize that pollutants of concern, including secondary pollutants, can also be addressed by Source Control and Site Design BMPs. With respect to selection of Treatment Control BMPs, Table 7.II.2 provides guidance for identifying the Treatment Control BMP(s) that are of medium to high effectiveness for treating either singly or in combination all of the primary pollutants of concern identified for that project. In addition all of the Treatment Control BMPs identified in the Model WQMP also provide a range of capabilities to treat the other pollutants. Therefore, targeting the primary pollutants of concern will also provide capabilities to reduce other pollutants.

To clarify the intent, the term secondary pollutants of concern has been deleted and changed to "other pollutants" and the text revised, to emphasize that all pollutants are important to consider and that Permittees reviewing Project WQMPs will examine the proposed BMPs as a whole in determining if the Project WQMP appropriately addresses the identified pollutants of concern.

**3. Requiring On-Site Treatment Control BMPs on Top of Regional Treatment Control BMPs (comments 18, 31 and 33)**

Summary of comments: Unless regional or watershed management Treatment Control BMPs addresses all pollutants of concern from a particular site, then additional on-site Treatment Control BMPs will be required.

Response: The Permittees understand that the focus of the Permit's Treatment Control BMP requirements are on the design standards for Treatment Control BMPs, which themselves relate to treatment of a specified volume or flow from a site. In the Model WQMP, the Permittees have added the concept of pollutants of concern to the program and indicated that Treatment Control BMPs are required to address identified pollutants of concern (Model WQMP § 7.II-3.2). However, Treatment Control BMPs are not the sole method of addressing pollutants expected to be contained within a site's runoff. Source Control and Site Design BMPs will also serve to address pollutants of concern. For example, Use of Efficient Irrigation Systems and Landscape Design, is a required Source Control BMP for all new development and significant redevelopment projects; implementation of this Source Control BMP can help address such pollutants of concern as nutrients, pesticides, and bacteria that can be considered pollutants of concern within certain types of developments. In this way, the Model WQMP's three types of BMPs work together to address pollutants of concern. We also understand that if a project's BMPs, including Treatment Control BMPs (as required) do not address the identified pollutants

of concern, that the Permittees will require revision/ modification of the Project WQMP. The Permittees understand that the Regional Board is not suggesting that individual Project WQMPs include on-site treatment devices if regional Treatment Control BMPs adequately address the individual project's runoff.

The Model WQMP has been clarified to indicate that Permittees reviewing Project WQMPs will examine the proposed BMPs as a whole in determining if the Project WQMP appropriately addresses the identified pollutants of concern.

**4. The use of BAT/BCT vs. MEP as a standard for new development permanent BMPs (Comments 11, 15, 17 and 36)**

Summary of comments: Maximum Extent Practicable (MEP) is the standard governing municipal permittees under the Permit and Best Available Technology (BAT) and Best Control Technology (BCT) are the standards governing industrial facilities and construction sites.

Response: The regulatory basis of the Permit requires that the Permittees develop and implement a stormwater program that meets the MEP standard, including a program for New Development and Redevelopment. Within the overall MEP context of the Permittees' program, new development and redevelopment projects have specific prescribed requirements for selection and incorporation of BMPs from various categories, taking into account receiving water conditions, and for sizing structural Treatment Control BMPs to meet numerical criteria. The Permittees agree that the MEP standard governs the Permit and its programs, and that the BAT and BCT standards govern specified industrial properties by Standard Industrial Classification and construction sites. The prescriptive requirements in the Model WQMP set forth the standards for all other new development and significant redevelopment. Once the Model WQMP has been approved, it constitutes an MEP-based program for the Permittees, with project proponents implementing projects based on its specified prescribed requirements.

In order to avoid confusion, references in the Model WQMP and DAMP to both MEP and BAT/BCT as respect to specific criteria for BMP selection and design have been removed. In particular, in the first paragraph of Section 7.II-1.0, the goal of the Model WQMP has been revised to be similar to the stated goal in Section XII.B.2 of the Permit.

**5. Requirements for Source Control and Site Design BMPs (comments 18, 25, 26 and 35)**

Summary of comments: The comments request clarification as to the Source Control and Site Design BMPs required of projects under the Model WQMP.

Response: The intent of the Model WQMP and the WQMP template that is included in each Permittee's Local Implementation Plan (DAMP, Appendix A) is that all Source Control BMPs must be included with every project unless they do not apply because of project characteristics. A number of these BMPs will not apply to various projects simply due to the nature of the project (e.g., no common area landscaping, no outdoor material storage areas) and it is desirable to simplify both applicant and Permittees efforts so as not to require extensive effort to document and review why BMPs were not used in these cases. However, if project characteristics are such that a BMP is applicable, and the applicant proposes not to include the

BMP, a detailed explanation is required. This has been clarified in the appropriate sections, and the WQMP template will be revised.

With respect to Site Design BMPs, the intent of the Model WQMP is to require Priority and Non-Priority Projects to consider the inclusion of Site Design BMPs in projects where applicable and feasible, but not require any such BMPs be included, nor the reasons for this decision to be provided. Site Design BMPs by their nature must be appropriate to project site conditions, and are not applicable to all projects due to size, topography, soils characteristics and other factors. Many Site Design BMPs use non-traditional design approaches that frequently require changes in, or conflict with, other traditional development standards. Examples include using BMPs that rely on infiltration on sites with inappropriate soil or depth to groundwater conditions, or incorporating narrow street sections that conflict with current fire agency standards. Furthermore, the Permit does not require that Site Design BMPs be included at the individual project level, but does require Permittees to adopt general planning and watershed policies and principles that will encourage the use of such techniques and adopt them as jurisdictional or watershed development standards. The Model WQMP proactively provides guidance and incentives for project proponents to include Site Design BMPs "where practical and feasible", but without a specific burden of proof as to why specific Site Design BMPs were not included.

The comments also express concerns with the discussions within the Model WQMP on the relative effectiveness of Site Design BMPs for reducing runoff and pollutant loads. Revisions have been made in response to the comments, but the Permittees still believe it is important to emphasize the benefits of Site Design BMPs. Properly planned, designed and maintained, Site Design BMPs have been shown in many studies to be highly effective in reducing both the volume and/or flow rate of runoff and the corresponding pollutant load and are effectively used in a number of areas of the country. Under the appropriate conditions and where practicable, all or portions of a site can be designed to incorporate on-site techniques that promote infiltration and evapotranspiration up to the water quality design volume.

**6. Application of requirements to Significant Redevelopment Projects (Comment 5, 18 and 33)**

Summary of comments: Redevelopment projects meeting the sizing threshold referenced in the Permit require inclusion of Treatment Control BMPs regardless of the underlying project to which the redevelopment may be an addition.

Response: In attempting to respond to requirements of both the Santa Ana (North Orange County) and San Diego (South Orange County) permits to arrive at countywide consistency, the Model WQMP addresses significant redevelopment as follows:

- Use a common definition of significant redevelopment, which is similar in both permits
- Require all significant redevelopment projects, regardless of size or characteristics to prepare a Project WQMP
- Require all significant redevelopment projects that fall into one of the other subject land use categories upon completion of redevelopment to be considered as Priority Projects (term

from the San Diego permit) and include Treatment Control BMPs subject to numerical sizing criteria.

- For priority redevelopment projects, where the impervious area of the site is increased by more than 50%, require Treatment Control BMPs for the entire site.

Therefore, all significant redevelopment projects are covered in the Model WQMP as required by the Santa Ana permit, and Treatment Control BMPs are included where the redevelopment project characteristics are similar to any of the Priority Project categories for new development. This approach holds redevelopment projects to the same thresholds as new development projects with respect to requiring Treatment Control BMPs. This is an equitable approach and in keeping with the intent of other permits with SUSMP requirements (e.g. San Diego, Los Angeles). The permittees do not believe that it is the intent of the Permit to require Treatment Control BMPs on a significant redevelopment project that added 5,000 square feet to a commercial site of, for example, 50,000 square feet, when a similar new development project would not require Treatment Control BMPs. It should be noted that if the newly created area is 5,000 square feet of streets, roads, parking and other similar paved areas as noted in the comment, the paved area would itself be considered a Priority Project and require Treatment Control BMPs for that portion of the project, regardless of the nature of the rest of the site.

For the above stated reasons, the Permittees have determined that modification of the DAMP text and Model WQMP is not required.

**7. Use of 0.8 inch rainfall criteria (comments 33 and 38)**

Summary of Comments: Comments questioned the use of 0.8 inch of rainfall in calculations and guidance provided in the Model WQMP.

Extensive review of historical rainfall data was conducted by County of Orange hydrology staff and by Camp, Dresser and McKee (CDM), and found that across most of the coastal plain and lower elevation inland valley areas, the average hydrology does not vary substantially, and 0.8 inches represented a weighted average of all lower elevation stations. Furthermore, not all local stations have sufficiently long and complete rainfall records to develop equivalent 85$^{th}$ percentile estimates. On the other hand, average rainfall increases significantly at higher elevations within the southeast portion of the county. CDM developed an estimate of an average of 0.95 inches using data from several gauges at elevations within the foothills up to approximately the maximum elevation of potentially developable land. An elevation contour of 1,000 feet was determined to be a reasonable threshold between these two rainfall zones. This approach was discussed in Attachment A but was not clearly conveyed in the document. The text has been revised.

## Responses to Comments

The following is a summary of responses to the comments received:

Comment 1. The purpose of this section was to summarize earlier (1993) DAMP commitments to provide context for development of the revised 2003 DAMP. At the time, the 5 acre requirement applied so this section was not changed. Section 7.6.3, Conditions of Approval has

been revised to reflect that the one acre threshold is now the requirement for all construction projects.

Comment 2. As noted in DAMP Section 7.2.1, the New Development/Construction Task Force was established by the Permittees to provide specific technical review on the proposed controls and the impact of their implementation. The Task Force included a wide array of interests including non-affiliated technical experts cited in the membership table. One of these was from the environmental community.

Comment 3. The sentence referencing inland cities has been deleted. For further discussion on evaluation of downstream and cumulative effects and impacts, refer to Primary Issue 1 - Downstream and cumulative effects.

Comment 4. The definition has been changed to delete new sidewalks and bike lanes from automatic exclusion (see also discussion under Primary Issue 6 - Redevelopment earlier in this letter). However, the Permittees believe that reconfiguring existing parking areas that does not add additional impervious area should be considered routine maintenance.

Comment 5. See discussion under Primary Issue 6 – Redevelopment.

Comment 6. Back-reference has been added to Section 7.6.2 that sets forth the requirements for projects requiring a Project WQMP. Section 7.6.2 requires Project WQMPs of all projects regardless of size that fit one of the categories in Table 7.1 that is based on Permit Section XII.B.1 (except as noted above for significant redevelopment).

Comment 7. Figure 7-3 is specifically applicable to private projects and this has been clarified. Discussion on tracking, inspection and enforcement for both private and public projects is included in section 7.6.6 and 7.7. Text has been added to indicate how post-construction tracking of public agency projects becomes part of the Municipal Activities Program.

Comment 8. The parenthetical phrase has been in the DAMP since 1993 and applies specifically to certain specialty local permits categories in which some Permittees may want to apply this particular condition rather than trying to reflect the exact terminology of the General Permit. The phrase has been put into italics.

Comments 9 and 15. The comment is noted. While industrial activities may be able to take advantage of the No Exposure Certification process under the anticipated General Permit revisions, they will still be required to file an NOI and will receive a WDID, and this is the proof that the Permittees will continue to require as a condition of approval regardless of whether the industry is subsequently able to achieve No Exposure coverage status. Therefore no change is proposed in the condition.

Comment 10. The statement in Section 7.6.3 has been clarified to indicate that these would be additional measures rather than substituting for the Model WQMP requirements.

Comments 11 and 12. The text in Section 7.6.4 has been revised to describe the level of detail expected in Project WQMP's (not construction level), the difference between Project WQMP

details and final design plans, and the role of BMP fact sheets in conjunction with other design details. In addition, the California BMP Handbook has been noted as one of many resources that should be consulted (a fuller list is provided in the Model WQMP Attachment B). See also discussion under Primary Issue 4 – BAT/BCT.

Comment 13. Second and Third bullets – text revisions regarding the elimination or reduction of sediment were made. However, including reference to BAT, BCT in plan notes is not appropriate for field notes. All applicable sites (1 acre or greater) follow BAT/BCT standards by conforming to General Permit requirements that are enforced by the Regional Board.

Fourth bullet – text has been revised;

Seventh bullet – text revisions made to tie more closely to General Permit language;

Eighth bullet – text revisions made to clarify groundwater infiltration.

Comment 14. The Permittees agree that review of an alternative BMP proposal should be reviewed to determine if the project proponent and the engineer of record have provided adequate information to support the certification of equivalent performance. However, the Permittees do not agree that approval of a Project WQMP that includes an alternative BMP that has been certified and adequately documented places any greater responsibility on the Permittee than approval of any of the other accepted BMPs listed in the Model WQMP.

Comment 15. See response to comment 9 and Primary Issue 4 – BAT/BCT.

Comment 16. Text added to describe that Operations and Maintenance should be performed annually prior to the start of the rainy season.

Comment 17. First paragraph – see discussion under Primary Issue 4 – BAT/BCT;

Second paragraph – text revised as suggested.

Comment 18. First paragraph – see discussion under Primary Issue 3 – On-Site Treatment Control BMPs and Primary Issue 6 – Redevelopment;

Second paragraph – see discussion under Primary Issue 5 – Source Control and Site Design BMPs;

Third paragraph – see discussion under Primary Issue 2 – Primary and Secondary Pollutants of Concern and Primary Issue 3 – On-Site Treatment Control BMPs.

Comment 19. First paragraph – added language in Section 7.II-3.2.2 regarding legacy pollutants;

Second paragraph –The definitions were generally taken from those used in the approved San Diego permit SUSMP. It is noted that there are a number of source definitions available; some edits have been made for clarification.

Comment 20. First paragraph – added language regarding consideration of downstream receiving waters;

Second paragraph – see discussion under Primary Issue 2 – Primary and Secondary Pollutants of concern;

Third paragraph – see discussion under Primary Issue 1 – Downstream and cumulative effects.

Comment 21. While paved areas of commercial sites and parking lots may generate small quantities of fine sediments that may in turn entrap metals, organics or oil and grease, as noted in other columns, from a total sediment load perspective, these land uses would not be expected to result in the same level of sediment per acre as non-paved areas whether in landscaped, bare or natural conditions. Therefore this is not proposed to be changed. With respect to pesticides, the footnote has been changed to denote "landscape open areas".

Comment 22. The revised Model WQMP will contain the final 2002 list as approved by EPA. The mechanism for updating the 303 (d) list in the DAMP is through the annual progress reports.

Comment 23. Discussed under Primary Issue 1 – Downstream and cumulative impacts.

Comment 24. The first two items have been addressed. With respect to Public Agency Project WQMPs, the permittees' municipal activities programs effectively cover all of the typical non-structural BMPs, and as a new facility is completed and becomes part of the Permittee inventory of municipal facilities, the BMPs will be implemented and tracked through that program, therefore, it seems redundant to include in the Project WQMP. However, the text has been slightly modified to clarify that these BMPs will be included for the project, as part of the Municipal Activities program.

Comment 25. First paragraph – see discussion under Primary Issue 5 – Site Design and Source Control BMPs.

Second paragraph – sentence has been deleted.

Second and Third paragraphs – see discussion under Primary Issue 5 – Site Design and Source Control BMPs.

Comment 26. Third paragraph – the term "minimize impervious footprint has been commonly used in most permits and stormwater planning guidance and the Permittees propose to keep this text. The decisions on determining allowable land use density, which is acknowledged as an important planning tool is more

appropriately considered in general planning, zoning and land use entitlement process. See Primary Issue 5 – Source Control and Site Design BMPs;

Fourth paragraph – regarding conserving natural areas, this was intended as general guidance; but as the comment noted, there are many potential considerations that cannot be fully represented in limited guidance and for which priorities may vary. Rather than try to reflect all possible issues and generalize priorities the specific items have been deleted while keeping the general guidance.

Comment 27. Permittees have reported on the incorporation of BMPs in WQMPs in prior annual reports and will develop guidance and training for the re-inspection or re-surveying of approved WQMPs, which will build on the approaches set forth in DAMP Section 9 for existing developments.

Specific Responses to Comments as follows:

BMP N2 – an example of activity restrictions has been included;

BMP N9 – revisions regarding fire department and local health care agencies have been made;

BMP N12 - the Permittees have implemented this requirement by having developed activity specific brochures and posters which have been made available for developers to distribute in conformance with the requirements set forth by the DAMP;

BMP N13 – appropriate revisions have been made;

BMP N14 – appropriate municipal program requirements have been referenced;

BMP N15 – the BMP already implies sweeping prior to the start of the storm season, further restrictions on scheduling of private sweeping are not considered practical;

BMP N16 **–** the BMP has been removed.

Comment 28. Permittees have reported on the incorporation of BMPs in WQMPs in prior annual reports and will develop guidance and training for the re-inspection or re-surveying of approved WQMPs, which will build on the approaches set forth in DAMP Section 9 for existing developments.

Specific Responses to Comments on BMPs are as follows:

Provide storm drain stenciling and signing – the Model WQMP already requires an overall plan for maintenance responsibilities of all BMPs;

Outdoor material storage – added prohibition on discharge language, but completely eliminating the possibility of introduction of precipitation is not practical short of fully enclosing areas;

Trash storage area – see previous comment;

Efficient irrigation systems – text has been revised;

Protect slopes and channels – requirements for full stabilization as quickly as possible and temporary slope protection are covered in the construction program, the Model WQMP focuses on the long-term design features.

Comment 29. table has been revised.

Comment 30. A restriction on "other features which are capable or equally effective" has been added.

Specific Responses to Comments on BMPs are as follows:

First paragraph - text has been revised;

Loading areas – text has been revised;

Maintenance bays – text has been revised;

Vehicle wash areas - text has been revised;

Outdoor processing areas - text has been revised;

Equipment wash areas – text has been revised;

Fueling areas - spill kits are part of non-structural source control BMPs, Fueling discharge detection and alarm systems and emergency/automatic shutoff devices are required by other regulations;

Wash water controls for preparation areas - text has been revised;

Community car wash racks – text has been revised.

Comment 31. First paragraph – text has been revised;

Other paragraphs – see discussion under Primary Issue 2 – Primary and Secondary Pollutants of concern and Primary Issue 3 – On-Site Treatment Control BMPs.

Comment 32. First paragraph – text has been added regarding identification of responsible parties and an appropriate level of either project-specific and/or coordination with regional monitoring programs. The Permittees do not necessarily agree that BMPs that may be used in regional programs are necessary less understood or demonstrated It should be noted, for example that the Permittees have produced a report entitled "*BMP Effectiveness and Applicability for Orange County* " that provides the literature performance of many BMPs;

Second paragraph – text added to discuss coordination with Resource Agencies.

Comment 33. First paragraph – see discussion under Primary Issue 3 – On-Site Treatment Control BMPs.

Second paragraph – this flexibility of reducing the number of options was suggested for Permittees that wanted to simplify the process for project proponents and reviewers and would appear to be allowed under the Permit. However, this choice has been eliminated;

Third paragraph – see discussion under Primary Issue 7 – Rainfall criteria;

Four paragraph – see discussion under Primary Issue 6 - Redevelopment.

Comment 34. First paragraph – text has been revised;

Second paragraph – see discussion under Primary Issue 1 - Downstream and cumulative effects;

Third paragraph – see discussion under Primary Issue 2 – Primary and Secondary pollutants of concern;

Fourth paragraph - the reference to "supporting beneficial uses" has been deleted;

Fifth paragraph – turbidity has been included with sediment. Toxicity is reflected in other pollutants of concern such as pesticides, oil/grease, and organic compounds;

Comment 35. See discussion under Primary Issue 5 – Source Control and Site Design BMPs.

Comment 36. First paragraph – text revised as requested regarding waiver processing;

Second paragraph – see discussion under Primary Issue 4 - BAT/BCT;

Third paragraph – see discussion under Primary Issue 1 - Downstream and cumulative effects.

Comment 37. Text has been revised.

Comment 38. See discussion under Primary Issue 7 – Rainfall Criteria.

Comment 39. Corrected formatting errors and revised definitions.

We will be glad to discuss any of our responses and proposed changes further with Regional Board staff. We sincerely appreciate the input and cooperation we have received in the development of this critical element of the area-wide stormwater program.

Sincerely,

[Signed copy on file]

Larry McKenney,
Manager, Watershed and Coastal Resources

cc: Orange County Permittees
Technical Advisory Committee

Attachments

## 7.0 NEW DEVELOPMENT/SIGNIFICANT REDEVELOPMENT

With the adoption of the Third Term Permits in early 2002, the Permittees were required modify their current New Development/Significant Redevelopment Program (**1993 DAMP Appendix G**) to meet new permit requirements.

The goals for the updated New Development/Significant Redevelopment Program are to provide the Permittees with:

- A program framework for reducing the adverse impacts that new development and significant redevelopment may have on water quality
- Methodologies to meet NPDES permit requirements

This section and its exhibits provide the new countywide Model New Development/Significant Redevelopment Program (Model Program). The Model Program is intended to be implemented as described in **DAMP Section A-7** of each Permittee's Local Implementation Plan. In developing its Local Implementation Plan, the Permittee may modify the Model Program in response to local conditions. It is not the intent for this Model Program to restrict city or county planning commissions or their governing bodies from imposing additional stormwater management requirements as a condition of development.

### 7.1 Regulatory Requirements

The federal stormwater regulations specify that drainage area management plans include "a description of planning procedures including a comprehensive master plan to develop, implement, and enforce controls to reduce the discharge of pollutants...from areas of new development and significant redevelopment."

The Regional Boards have identified a need for individual stormwater quality management plans to apply equally to private and public agency projects. Transportation corridors, schools, parks, flood control projects and other public facilities are thus subject to the same requirements as planned communities and mini-malls.

The New Development/Significant Redevelopment Program was developed (see **DAMP Section 7.3**) as a model for fulfilling the new development and significant redevelopment commitments and requirements of:

- Section XII of the Santa Ana Regional Water Quality Control Board Municipal NPDES Stormwater permit, Order No. R8-2002-0010
- Section F.1 of the San Diego Regional Water Quality Control Board Municipal NPDES Stormwater permit, Order No. R9-2002-0001

Although there is a provision in the State regulations that school districts must obtain municipal approval for "improvements which affect drainage", the Government Code effectively prevents city/county regulation of many federal and state agencies and local special districts. The First

and Second Term Permits, however identify these entities as potential dischargers of stormwater to the Orange County drainage areas and the expectation is that these entities will work cooperatively with the Permittees to manage urban runoff and stormwater pollution. These entities include: Caltrans, universities and colleges, Metropolitan Water District, Department of Defense, school districts, sanitation districts, water districts and railroads. During the Third Term Permit, regulation of a number of these is expected under Phase II of the Federal stormwater regulations.

## 7.2 Program Development

The regulatory requirements and permit conditions have necessitated the development of a program to ensure that stormwater quality management is considered during a project's planning phase, implemented during construction, and ultimately maintained for the life of the project

### 7.2.1 First and Second Term Permit

In 1993, the New Development/Construction Task Force, comprised of representatives from the Principal Permittee, Building Industry Association (BIA), Association of General Contractors (AGC) and Civil Engineers & Land Surveyors of California (CELSOC), completed a report that provided the basis for requiring the incorporation of structural and non-structural Best Management Practices (BMPs) into new development and significant redevelopment. The report, entitled "Best Management Practices For New Development Including Nonresidential Construction Projects (1-5 acres)" (**1993 DAMP Appendix G**), involved additional contributions on specific BMPs from the Western States Petroleum Association (WSPA), Food Sanitation Advisory Council (FSAC), and Orange County's sanitary districts.

At the end of this process, the Permittees had developed an effective and flexible program for new development and significant redevelopment that allowed a strong focus to be placed on constituents of concern identified through the monitoring program and water quality planning process.

In 1997 the Permittees certified that they were implementing the **1993 DAMP Appendix G**. Since that time, the Permittees and development industry have gained considerable experience in implementing over a thousand Water Quality Management Plans (WQMPs) countywide. The **1993 DAMP Appendix G** contained the following elements:

- Each new private development and significant redevelopment is required to implement appropriate "routine" non-structural BMPs in keeping with the size and type of development, to minimize the introduction of pollutants into the drainage system (i.e. educational materials, landscape management, spill contingency plans, litter control, employee training, street sweeping).

- Each new private development and significant redevelopment is required to implement appropriate "routine" structural BMPs in keeping with the size and type of development.

"Routine" structural BMP's are economical, practicable, small scale-measures, which can be feasibly applied at the smallest unit of development, using standard plans developed by the New Development/ Construction Task Force. Routine structural BMP's may function either to minimize the introduction of pollutants into the drainage system or to remove pollutants from the drainage system and are intended to address drainage water quality impacts inherent in development, and need not be related to any identified water quality problem (i.e. filtration, efficient irrigation, landscape design, car wash racks, trash container areas, motor fuel concrete dispensing areas and canopies, catch basin stenciling, water quality inlets).

- "Special" structural BMPs are to be installed in new development and significant redevelopment to address specific water quality problems identified in the water quality monitoring program or the water quality planning process. This requirement may be addressed by providing an on-site "special" structural BMP, or by contributing to the implementation of a structural BMP specified within a watershed plan.

  "Special" structural BMP's are engineered facilities designed to address specific pollutant problems identified in the water quality planning process, runoff management plan, CEQA process, or similar watershed planning. However, it was not the intent of this program to restrict city or county planning commissions or their governing bodies from imposing additional stormwater management requirements as a condition of development (i.e. water quality ponds, dry/wet basins).

- Each new private development or significant redevelopment is required to prepare a Project WQMP specifying the "routine" structural and non-structural BMPs (and any "special" BMPs) that will be used on site for approval by the Permittee with jurisdiction over the site (single family residences may be exempted from this requirement).

- Each private grading permit applicant with a development greater than five (5) acres is required to provide proof of coverage under Construction Permit.

- Each private commercial or industrial project 1-5 acres is required to have special construction notes on the building plans and grading plans.

**Tables 1 and 2** of the **1993 DAMP Appendix G** provide an outline of standard practice site specific structural and non-structural BMPs for categories of development such as residential, industrial, retail/office centers, restaurants, warehouses/grocery, fuel dispensing areas and vehicle repair/maintenance facilities

In early 2001, to prepare for the Third Term Permits, the Permittees began the process of re-establishing the New Development/Construction Task Force. During the initial meetings of the Permittees, it was determined that the Task Force should provide a technical review role that would be able to provide feedback on either the proposed controls themselves or the impact of their implementation.

The following participants were identified to participate in the Task Force:

| Permittees | Additional Members |
|---|---|
| County of Orange | Association of General Contractors |
| City of Anaheim | American Planners Association |
| City of Brea | American Society of Civil Engineers |
| City of Huntington Beach | Building Industry Association |
| City of Irvine | California Association of Community Managers |
| City of Laguna Beach | Food Sanitation Advisory Council |
| City of Orange (Chair) | Irvine Ranch Water District |
| City of San Clemente | Orange County Water District |
| City of San Juan Capistrano | Orange County Sanitation District |
| City of Westminster | Rancho Mission Viejo |
| | South Orange County Wastewater Authority |
| | The Irvine Company |
| | Vector Control District |
| | Western States Petroleum Association |
| | Non-Affiliated Technical Experts |
| | Representatives of the Santa Ana and San Diego Regional Water Quality Control Boards as Ex-Officio Members |

With the adoption of the Third Term Permits in early 2002, the Permittees were required to begin to modify their current New Development/ Significant Redevelopment Program (**1993 DAMP Appendix G**) to meet new permit requirements.

## 7.3 Model New Development/Significant Redevelopment Program

### 7.3.1 Introduction

The Model Program provides a framework and a process for following the requirements to incorporate watershed protection/stormwater quality management principles into the Permittees' General Plan process, environmental review process, and development permit approval process, as required by the Third Term Permits. The Model Program also defines requirements and provides guidance for compliance with the requirements for project specific planning, selection, and design of BMPs in a new development or significant redevelopment project. The program covers initial project planning through design, construction and completion, including requirements for long-term maintenance of permanent BMPs. Detailed requirements for construction phase BMPs and procedures are contained in the Construction Model Program (**DAMP Section 8.4).**

### 7.3.2 Model Program Requirements and Objectives

Each Permittee is required to minimize short and long-term impacts on receiving water quality from new development and significant redevelopment to the maximum extent practicable and must at a minimum:

1) Assess the need to revise and update General Plans to include watershed and stormwater quality and quantity management considerations. (Section XII of Santa Ana Region Permit, Section F.1 of the San Diego Region Permit)

2) Review CEQA process for potential stormwater quality impacts and mitigation. (Section XII of Santa Ana Region Permit, Section F.1 of San Diego Region Permit)

3) Review Development Planning/Permit approval process for stormwater protection principles. (Section XII of Santa Ana Region Permit, Section F.1 of the San Diego Region Permit)

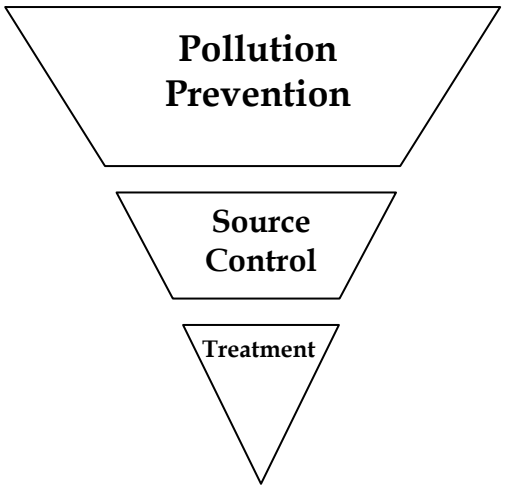
4) Review existing BMPs and develop Model WQMP (also referred to as a Standard Urban Stormwater Mitigation Plan – SUSMP) to address impact from new and significant redevelopment. (Section XII of Santa Ana Region Permit, Section F.1 of the San Diego Region Permit)

5) Conduct education or training for Model Environmental Review Program elements. (Section XII of Santa Ana Region Permit, Section F.1 of the San Diego Region Permit)

The overall objective of the Model Program is to provide guidance to the Permittees on how to implement the Third Term Permit requirements into their respective General Plan and environmental review and development permit processes. The Model Program will address the specific requirements contained in the Third Term Permits with distinctions as appropriate where the permits differ in their requirements.

Use of the procedures in the Model Program are intended to promote countywide consistency among the Permittees, which provides for uniform receiving water quality protection and program effectiveness assessment. The Model Program is based upon a three-tiered approach for reducing the potential impact of new development and significant redevelopment projects on water quality. The three tiers are Pollution Prevention, Source Control, and Treatment, as shown in **Figure 7-1**.

**Figure 7-1. Program Approach**




Pollution Prevention controls are emphasized and will be used as the first line of defense and include measures such as education for property owners and tenants and occupants and common areas landscape maintenance. Source Control BMPs will be included in new development and significant redevelopment projects to further reduce the amount of pollutants released into the environment and Treatment Control BMPs will be incorporated as described later to further supplement the Pollution Prevention and Source Control BMPs by actually treating the water to remove the pollutants.

For the purposes of this section of the DAMP, the following definitions apply:

*Pollution Prevention* - any practice that reduces or eliminates the creation of pollutants.

*Source Controls* - practices that prevent pollution by reducing pollutants at their source.

*Treatment Controls* - practices that remove pollutants from the water.

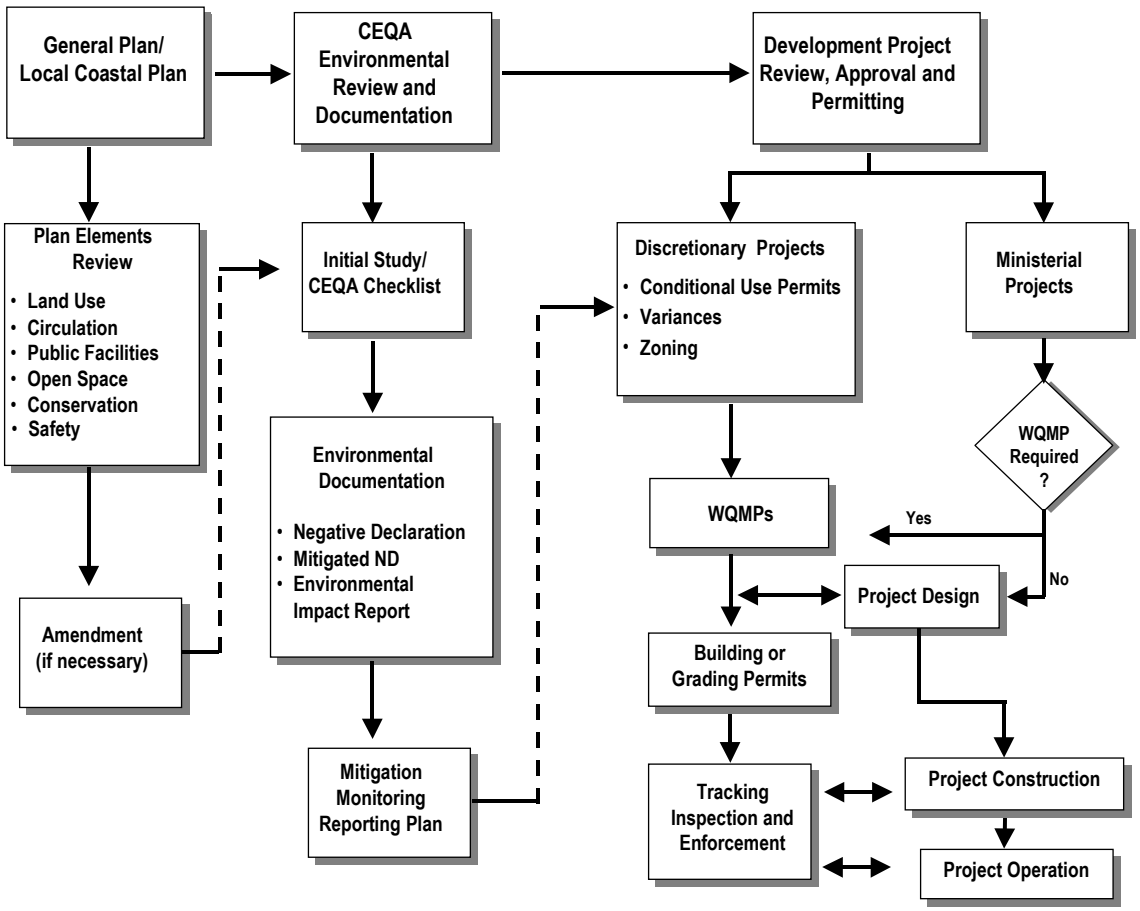
### 7.3.3 Model Program Overview

The Model Program links new development BMP design, construction and operation to the earlier phases of new development project planning encompassed by the General Plan,

environmental review process, and development permit approval processes. A City/County General Plan specifies policies that guide new development. The environmental review process examines impacts from proposed new development with respect to the General Plan policies and many environmental issues, including water quality, and includes consideration of mitigation measures to reduce any identified significant impacts.

The development permit approval process carries forth mitigation requirements in the form of conditions of approval, design specifications, tracking, inspection and enforcement actions. These three "front-end" planning processes must be coordinated and linked to the later phases of BMP design, construction and operation for new development and significant redevelopment projects to help ensure stormwater quality protection features are planned, designed and evaluated in accordance with City/County goals for protection of water quality and other environmental resources. **Figure 7-2** is a generalized flow diagram that depicts the relationship of the General Plan, environmental review process and development planning and permit process, as well as the project design, construction, and operation phases.

**Figure 7-2. Relationship between General Plan, Environmental Review Process and Development Permit Process**



### 7.3.4 Contents of Model Program

The guidance provided by the Model Program is presented in the following subsections:

- Section 7.4 - General Plan Assessment and Amendment describes the process for the Permittees to assess their existing General Plans and make any needed amendments to include watershed and stormwater quality and quantity management considerations.
- Section 7.5 - CEQA Environmental Review Process provides guidance for utilizing/revising checklists and guidance for conducting environmental review for stormwater quality impact assessment.
- Section 7.6 - Development Project Review, Approval and Permitting provides policies and procedures for project plan review including information pertaining to discretionary permits, ministerial permits, Project WQMP requirements, tracking, inspection and enforcement. The guidance and procedures for Project WQMP preparation and for selection and design of regional/watershed and site specific BMPs is provided in Exhibit 7.II, Model WQMP.
- Section 7.7 - Post Construction BMP Inspection and Verification provides information on the periodic review of approved Project WQMPs
- Section 7.8 - Model Program Training and Outreach provides general information on the training modules that have been developed for use by each Permittee in informing municipal staff, developers and contractors.
- Section 7.9 - Annual Reporting and Assessing Program Effectiveness describes the annually reporting on the implementation and effectiveness of the New Development /Significant Redevelopment Program by the Permittees.

## 7.4 General Plan Assessment and Amendment

### 7.4.1 Introduction

Each Permittee is required by the Third Term Permits to minimize short and long-term impacts on receiving water quality from new development and significant redevelopment to the maximum extent practicable. With regard to the General Plan, the Permittees must at a minimum review and update General Plans, as necessary, to ensure watershed and stormwater quality and quantity management are considered.

This section of the Model Program addresses these General Plan assessment requirements:

- The San Diego Region Permittees must provide a work plan as part of its submittal on February 13, 2003 with a time schedule detailing any changes to its General Plan regarding water quality and watershed protection.

- The Santa Ana Region Permittees must review their General Plan by December 19, 2002 to ensure urban-runoff related issues are properly considered and addressed. The findings of this review and the actions taken by the Santa Ana Region Permittees must be reported to the Santa Ana Regional Board by January 2, 2003. Each Santa Ana Region Permittee must provide the Santa Ana Regional Board with the draft amendment or revision when a pertinent General Plan element or the General Plan is noticed for public comment.

The next section provides background on the General Plan and Local Coastal Program followed by a process for reviewing and amending General Plans, as necessary, to incorporate water urban runoff and stormwater pollution issues.

### 7.4.2 Background on the General Plan and Local Coastal Program

#### *7.4.2.1 General Plan*

Under California State law (California Government Code §65300) each city and county in California must prepare a comprehensive, long-term General Plan for the physical development of its community. The General Plan must consist of a statement of development policies and include a diagram(s) and text setting forth objectives, principles, standards and plan proposals (California Government Code §65302).

The General Plan consists of seven mandatory elements and any optional element that a city or county chooses to adopt. The mandatory elements include:

- Land Use
- Open Space
- Circulation and Infrastructure
- Conservation

- Housing
- Safety
- Noise

Any optional elements that are adopted by a city/county, such as Public Facilities, have equal authority as the mandatory elements. The legislative body of each city (the city council) and each county (the board of supervisors) adopts zoning, subdivision and other ordinances to regulate land uses and to carry out the policies in the General Plan. The plan is also used to guide decision-makers in determining whether or not land use proposals are consistent with the applicable goals, objectives, and policies.

*7.4.2.2 General Plan Amendment Process*

A General Plan Amendment is a request to revise some component of the City's or County's General Plan. This can include addition, deletion or modification of goals and policies; modifications to the land use map or other diagrams; or other changes. A General Plan Amendment is a legislative act. Under State law, General Plan Amendments are allowed four times per year (California Government Code §65358(b)).

A General Plan Amendment must be approved by the Planning Commission and City Council or at the County level by the Board of Supervisors at public hearings. In approving a General Plan Amendment, the approving body must assess the policy implications of the proposed General Plan Amendment and the impact and compatibility of the proposed General Plan Amendment on the long-term goals and desires of the City or County and its citizens.

Most General Plan Amendments are carried out in conjunction with a specific development proposal, although the City, County, or any other agency or party can request an amendment without a specific development proposal in mind.

In evaluating a proposed General Plan Amendment, the approving body must look at the "global" impacts of the proposed amendment. Although a General Plan Amendment may be proposed in conjunction with a specific development proposal, the amendment proposed might have policy and/or land use impacts far beyond any given project or property. General Plan Amendments are frequently proposed in conjunction with other legislative acts such Zone Changes, Zone Text Amendments and Local Coastal Program Amendments.

*7.4.2.3 Local Coastal Program*

The California Coastal Commission (Commission) was established in 1972 and made permanent by the Legislature in 1976 (via the Coastal Act). The primary mission of the Commission, as the lead agency responsible for carrying out California's federally approved coastal management program, is to plan for and regulate land and water uses in the coastal zone consistent with the policies of the Coastal Act.

California's coastal management program is carried out through a partnership between state and local governments. Implementation of Coastal Act policies is accomplished primarily through the preparation of local coastal programs (LCPs) that are required to be completed by

each of the counties and cities located in whole or in part in the coastal zone. Completed LCPs must be submitted to the Commission for review and approval. In Orange County, the cities responsible for preparing an LCP include Seal Beach, Huntington Beach, Newport Beach, Laguna Beach, Dana Point and San Clemente. The County also has areas subject to an LCP.

The objective of an LCP is to protect coastal resources, provide greater access and recreational opportunities for the public's enjoyment, while allowing for orderly and well-planned urban development and the siting of coastal-dependent and coastal-related industry. The plan incorporates, to the maximum possible extent, local plans and policies that are consistent with the Coastal Act.

An LCP includes a land use plan, which is the relevant portion of the local General Plan, including any maps necessary to administer it, the zoning ordinances, zoning district maps, and other legal instruments necessary to implement the land use plan. Coastal Act policies are the standards by which the Commission evaluates the adequacy of LCPs (Public Resources Code §30108.6).

After certification of the land use plan and zoning components of the LCP, the review authority for new development within the coastal zone, which is now vested in the Coastal Commission, is returned to local government. Development within the coastal zone may not commence until a coastal development permit has been issued by either the Commission or a local government that has a Commission-certified LCP The local government, in issuing coastal development permits after certification, must make the finding that the development is in conformity with the approved LCP.

*7.4.2.4 Local Coastal Program Amendment Process*

Any amendments to a certified LCP have to be approved by the State Coastal Commission. To ensure that coastal resources are effectively protected in light of changing circumstances, such as new information and changing development pressures and impacts, the Commission is required to review each certified LCP at least once every five years (California Coastal Commission 2002).

7.4.3 Plan for Assessing General Plan Elements and Local Coastal Program

The San Diego Region Permit states:

> "Each Permittee's General Plan or equivalent plan (e.g., Comprehensive, Master, or Community Plan) shall include water quality and watershed protection principles and policies to direct land use decisions and require implementation of consistent water quality protection measures for development projects."

The Santa Ana Region Permit states:

> "Permittees shall review their watershed protection principles and policies in their General Plan or related documents (such as Development Standards, Zoning Codes, Conditions of

Approval, Development Project Guidance) to ensure that these principals and policies are properly considered and are incorporated into these documents."

The Permittees recognize the importance of addressing watershed protection and stormwater quality control in the land development process. The Permittees are requiring that stormwater quality BMPs be included in plans for new development and significant redevelopment.

Therefore, in accordance with State Planning and Zoning Law which provides that requirements placed on land development projects must be compatible with a community's General Plan and Local Coastal Program, watershed protection principles and stormwater pollution control objectives for land development should be reflected in the appropriate policies, goals, and objectives of each Permittee's General Plan and LCP.

Many of the general plan elements contain existing goals and policies that can be related to watershed protection and stormwater pollution control. For example, stormwater quality may be controlled by the type, location, and density of development. Such controls may be established through policies commonly found in the Land Use and Open Space Elements of the General Plan (e.g., development policies, development location guidelines, landscaping guidelines, open space policies, policies on preservation of and integration with natural features).

Development of local streets and roads, regulated under the policies of the Circulation and Infrastructure Element and to some extent, the Safety Element, results in increased impervious surfaces and accumulation of stormwater pollutants from vehicles. The Public Facilities Element provides management policies for construction, operation and maintenance of various public facilities including as flood control channels and storm drains, which convey stormwater runoff. The Conservation Element contains policies on water conservation that can be linked to water quality protection through efficient use of irrigation systems to prevent runoff.

The Permittees will review their General Plan Elements and LCP (if a coastal city with an approved LCP) that cover land development issues, for which it may be appropriate to reflect watershed protection and stormwater quality management policies.

This will include review of goals and policies in the following General Plan Elements:

- Land Use;
- Safety;
- Circulation and Infrastructure (i.e., transportation);
- Public Facilities;
- Open Space; and
- Conservation.

Permittees will review development goals and policies, landscaping policies and requirements, open space goals and policies including preservation or integration with natural features, water conservation policies, and public facilities operation and maintenance policies of these Elements. When reviewing the General Plan Elements and LCPs, special attention will be given

to how the element/plan addresses water quality protection from urban runoff and stormwater pollution. The Permittees will keep in mind the following questions during this review, which may trigger the need for specific urban runoff and stormwater pollution protection policies in the General Plan and LCP either as new policies and objectives or amended text to existing policies and objectives:

1) Are there sensitive water resources in the jurisdiction?

2) Are there existing Total Maximum Daily Loads (TMDLs) or other such regulations pertaining to receiving waters within the jurisdiction?

3) Is major new development or significant redevelopment expected?

4) Are major new infrastructure projects anticipated (e.g. roads, sewer, flood control, storm drains)?

5) Does urban runoff and stormwater pollution affect recreational use of water bodies within the jurisdiction?

Upon review of the Permittees General Plan Elements and LCP, the Permittees will determine which sections should be modified, if any, to include specific policies and objectives that address water quality protection as specified in the San Diego Region and Santa Ana Region Permits (See **DAMP Section 7.4.4** following).

Most of the Permittees' General Plans contain existing provisions in these various elements that protect water quality and the environment. Therefore, adapting a General Plan to incorporate water quality protection/stormwater quality management principles may be determined to be unnecessary, or it may be determined to be as simple as modifying existing text so that it specifically includes stormwater quality and protection policies and objectives, as outlined in the Permits. Additional policies, goals, or objectives that stress the importance of stormwater quality control or to implement certain types of stormwater management programs may be beneficial in the General Plans of cities expecting major growth and have sensitive water resources within their jurisdictions. The need for and the extent of revisions to the General Plan will need to be coordinated with each Permittee's legal counsel.

### 7.4.4 Consideration of Additional Water Quality and Watershed Protection Concepts in General Plan and Local Coastal Program

The Permittees will review and consider the following additional objectives to the General Plan and Elements, and LCPs as specified by the Third Term Permits, respectively:

*San Diego Region Permit:*

1) Minimize the amount of impervious surfaces and directly connected impervious surfaces in areas of new development and significant redevelopment and where feasible slow runoff and maximize on-site infiltration of runoff.

2) Implement pollution prevention methods supplemented by pollutant source controls and treatment. Use small collection strategies located at, or as close as possible to, the source runoff and pollutants offsite and into an MS4 (municipal storm drain).

3) Preserve, and where possible, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands, and buffer zones. Encourage land acquisition of such areas.

4) Limit disturbances of natural water bodies and natural drainage systems caused by development including roads, highways, and bridges.

5) Prior to making land use decisions, utilize methods available to estimate increases in pollutant loads and flows resulting from projected future development. Require incorporation of structural and non-structural BMPs to mitigate the projected increases in pollutant loads and flows.

6) Avoid development of areas that are particularly susceptible to erosion and sediment loss; or establish development guidance that identifies these areas and protects them from erosion and sediment loss.

7) Reduce pollutants associated with vehicles and increasing traffic resulting from development. Coordinate local traffic management reduction efforts with Orange County Transit Authority's Congestion Management Plan.

8) Post-development runoff from a site shall not contain pollutant loads that cause or contribute to an exceedance of receiving water quality objectives and which have not been reduced to the maximum extent practicable.

*Santa Ana Region Permit:*

1) Limit disturbance of natural water bodies and drainage systems; conserve natural areas; protect slopes and channels; and minimize impacts from stormwater and urban runoff on the biological integrity of natural drainage systems and water bodies.

2) Minimize changes in hydrology and pollutant loading; require incorporation of control, including structural and non-structural BMPs, to mitigate the projected increases in pollutant loads and flows; ensure that post-development runoff rates and velocities from a site have no significant adverse impact on downstream erosion and stream habitat; minimize the quantity of stormwater directed to impermeable surfaces and the MS4s (municipal storm drain); and maximize the percentage of permeable surfaces to allow more percolation of stormwater into the ground;

3) Preserve wetlands, riparian corridors, and buffer zones and establish reasonable limits on the clearing of vegetation from the project site;

4) Encourage the use of water quality wetlands, biofiltration swales, watershed-scale retrofits, etc., where such measures are likely to be effective and technically and economically feasible;

5) Provide for appropriate permanent measures to reduce stormwater pollutant loads in stormwater from the development site; and,

*6)* Establish development guidelines for areas particularly susceptible to erosion and sediment loss.

For further reference, the Permittees may review the sample general plan amendment text and sample urban runoff water quality general plan element outlined in *Model Urban Runoff Program, A How to Guide for Developing Urban Runoff Programs for Small Municipalities (City of Monterey, et al, July 1998).*

If a Permittee, in consultation with its legal counsel, determines the need to amend its General Plan or LCP (if applicable) to incorporate watershed and stormwater management principles, they will do so whenever elements of a Permittee's General Plan or LCP are significantly rewritten or by the July 1, 2004 date specified by the Santa Ana Region Permit. As part of any General Plan Amendment, maps will be revised, as necessary, to reflect location-specific watershed protection/stormwater quality management policies, and eliminate conflicts among land use districts, permitted land uses, and stormwater-specific goals and policies.

## 7.5 CEQA Environmental Review Process Modifications

### 7.5.1 Introduction

Each Permittee is required by the Permits to minimize short and long-term impacts on receiving water quality from new development and significant redevelopment to the maximum extent practicable. The Santa Ana Region Permit (Section XII.A.3) requires the Permittees to review their California Environmental Quality Act (CEQA) document preparation process to ensure urban runoff and stormwater pollution-related issues are properly considered and addressed. If necessary, the processes should be revised to consider and mitigate impacts to stormwater quality. The San Diego Region Permit (Section F.1.C) requires to the extent feasible that the Permittees revise their current environmental review process to include requirements for evaluation of water quality effects and identification of appropriate mitigation measures.

The San Diego Region Permittees must revise their environmental review process by February 13, 2003. The Santa Ana Region Permittees must review their CEQA documentation processes by December 19, 2002 to ensure urban-runoff related issues are properly considered and addressed.

The next section provides background on the CEQA environmental review process followed by a series of revisions that the Permittees will implement to ensure that urban runoff and stormwater pollution issues are incorporated in the process.

#### *7.5.1.1 Background on CEQA*

The California Environmental Quality Act (CEQA) applies to all discretionary activities proposed to be carried out or approved by the cities and County, unless an exemption applies. CEQA applies to public and private sector activities that require discretionary City/County approvals. The basic goal of CEQA (Public Resources Code §21000 *et seq.*) is to develop and maintain a high-quality environment now and in the future, while the specific goals of CEQA are for the cities/County and other public agencies to:

1) Identify the significant environmental effects of their actions; and, either
2) Avoid those significant environmental effects, where feasible; or
3) Mitigate those significant environmental effects, where feasible.

The implementation of CEQA is regulated by the Secretary for Resources, via the Office of Planning and Research's "State CEQA Guidelines" (Guidelines) (California Code of Regulations Title 14, Chapter 3, §15000 through 15007). These Guidelines are binding on all cities/counties and other public agencies in California.

There are three phases for implementing CEQA. These include:

- Preliminary review of a project to determine whether it is subject to CEQA.
- Preparation of an Initial Study to determine whether the project may have a significant environmental effect.

- Preparation of an Environmental Impact Report (EIR) if the project may have a significant environmental effect or a Negative Declaration or Mitigated Negative Declaration if no significant effects will occur (Guidelines §15002(k)).

*7.5.1.2 Preliminary Review*

Once an application for permits, approvals, or other entitlements has been submitted to the Lead Agency for CEQA review, the Lead Agency has 30 days to review the application for completeness. For private sector projects, the Lead Agency may require submittal of baseline environmental setting and detailed project description information to enable the Lead Agency to prepare the Initial Study. Appendix H of the CEQA Guidelines provides a sample project application form. Lead Agencies can rely on the sample form, but are free to devise their own project application forms (Guidelines §15002(k), to include, for example, specific information on BMPs.

*7.5.1.3 Initial Study*

The Lead Agency must conduct an Initial Study to determine if the project may have a significant effect on the environment. If the Lead Agency can determine that an EIR will clearly be required for the project, an Initial Study is not required but may still be desirable. (§15063). The Initial Study typically consists of the project applicant information obtained during the preliminary review process, the completed Initial Study checklist and required checklist explanations. An Initial Study checklist is provided in Appendix G of the CEQA Guidelines that covers all environmental topics for the Lead Agency to consider during the Initial Study, including Hydrology/Water Quality. All entries on the checklist must be explained during the Initial Study process. Lead Agencies are free to devise their own Initial Study checklists for use in the Initial Study process (Guidelines §15002(k). This may include more detailed questions related to urban runoff and stormwater pollution, if the Lead Agency deems appropriate for its jurisdiction.

*7.5.1.4 Environmental Impact Report (EIR)*

An EIR must be prepared if the proposed project may have a significant environmental effect. The most common type of EIR examines the environmental impacts of a specific development project. This type of EIR focuses primarily on the changes in the environment that would result from the development project. The EIR examines all phases of the project including planning, construction, and operation (§15161).

Immediately after deciding that an EIR is required for a project, the Lead Agency sends to each Responsible Agency a Notice of Preparation (NOP) stating that an EIR will be prepared. For water quality issues, responsible agencies would include the State Water Resources Control Board (State Board), the respective Regional Boards, the U.S. Army Corps of Engineers (for projects with discharges of dredge/fill into waters of the U.S.) and California Department of Fish and Game (for alternations of streambeds affecting waters of the state). This notice is also sent to every federal and state agency involved in approving or funding the project and to each Trustee Agency responsible for natural resources affected by the project. The NOP must provide the Responsible Agencies with sufficient information describing the project and the

potential environmental effects. The responses from the NOP assist in identifying the significant environmental issues and reasonable alternatives and mitigation measures that the Responsible Agency will need to explore in the draft EIR. (§15082). If water quality issues are identified as a significant environmental issue, then water quality would be discussed in the environmental setting (baseline), impact, and, if applicable, mitigation sections of the EIR.

*7.5.1.5 Negative Declaration*

A public agency prepares a Negative Declaration or Mitigated Negative Declaration for a project subject to CEQA when:

1) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or

2) The initial study identifies potentially significant effects, but:

    a) Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

    b) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment. (§15070)

A Negative Declaration circulated for public review must include a brief description of the project; the location of the project; a proposed finding that the project will not have a significant effect on the environment; an attached copy of the Initial Study documenting reasons to support the finding; and mitigation measures, if any, included in the project to avoid potentially significant effects. (§15071) Water quality issues are addressed in a Negative Declaration in the Initial Study and if applicable, mitigation measures are developed.

## 7.5.2 Revisions to the CEQA Initial Study Process

The San Diego Region Permit (Section F.1.C) requires to the extent feasible that the Permittees revise their current environmental review process to include requirements for evaluation of water quality effects and identification of appropriate mitigation measures. The San Diego Region Permit lists the following questions for consideration in the environmental review process to address increased pollutants and flows from proposed projects:

a) Could the proposed project result in an increase in pollutant discharges to receiving waters? Consider water quality parameters such as temperature, dissolved oxygen, turbidity and other typical stormwater pollutants (e.g. heavy metals, pathogens, petroleum derivatives, synthetic organics, sediment, nutrients, oxygen-demanding substances, and trash).

b) Could the proposed project result in significant alternation of receiving water quality during or following construction?

c) Could the proposed project result in increased impervious surfaces and associated increased runoff?

d) Could the proposed project create a significant adverse environmental impact to drainage patterns due to changes in runoff flow rates or volumes?

e) Could the proposed project result in increased erosion downstream?

f) Is the project tributary to an already impaired water body, as listed on the Clean Water Act Section 303(d) list? If so, can it result in an increase in any pollutant for which the water body is already impaired?

g) Is the project tributary to other environmentally sensitive areas? If so, can it exacerbate already existing sensitive conditions?

h) Could the proposed project have a potentially significant environmental impact on surface water quality to either marine, fresh, or wetland waters?

i) Could the proposed project have a potentially significant adverse impact on groundwater quality?

j) Could the proposed project cause or contribute to an exceedance of applicable surface or groundwater receiving water quality objectives or degradation of beneficial uses?

k) Can the project impact aquatic, wetland, or riparian habitat?

The Santa Ana Region Permit (Section XII.A.3) requires the Permittees to review their CEQA document preparation process to ensure urban runoff and stormwater pollution-related issues are properly considered and addressed. If necessary, the processes should be revised to consider and mitigate impacts to stormwater quality. The Santa Ana Region Permit lists the following potential impacts to be considered during CEQA review:

a) Potential impact of project construction on stormwater runoff;

b) Potential impact of project's post-construction activity on stormwater runoff;

c) Potential for discharge of stormwater pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas, loading docks or other outdoor work areas;

d) Potential for discharge of stormwater to affect the beneficial uses of the receiving waters;

e) Potential for significant changes in the flow velocity or volume of stormwater runoff to cause environmental harm; and

f) Potential for significant increases in erosion of the project site or surrounding areas.

These urban runoff and stormwater pollution issues will be considered in the Initial Study process (project application forms and checklists) and in the preparation and reviews of EIRs discussed in the following sections.

*7.5.2.1 Project Application Form*

The current project application form contained in Appendix H of the CEQA Guidelines (State of California Office of Planning and Research, February, 2001) contains many questions about the project to help environmental planners assess the potential for significant environmental impacts. However, there are no specific project description questions that help characterize the potential for urban runoff and stormwater pollution impacts. The Permittees will review their existing project application forms and, as deemed necessary, will revise the form to include line items for:

- Expected percent change in pervious surface area of the site; and
- Submittal of preliminary Project WQMP, if applicable, (along with required submittal of other development plans).

*7.5.2.2 Initial Study Checklist*

The current Initial Study Checklist contained in Appendix G of the CEQA Guidelines (State of California Office of Planning and Research, February 2001) was recently updated and is used by nearly all Permittees in their environmental review process. This Checklist contains the following considerations under the environmental impact category "Hydrology and Water Quality (Section VIII):

Would the project:

a) Violate any water quality standards or waste discharge requirements?

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

f) Otherwise substantially degrade water quality?

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

j) Inundation by seiche, tsunami, or mudflow?

The Permittees have concluded that urban runoff and stormwater pollution considerations are generally covered in questions a) through f) of the CEQA Guidelines Appendix G checklist, but in some cases with less specificity than the questions provided in both the San Diego and Santa Ana Region Permits. To ensure that the Initial Study thoroughly considers all issues listed in the Permits, the Permittees will review the Initial Study checklist and determine whether to include some or all of the additional considerations provided in the Third Term Permits.

The Permittees will also consider adding the following question to the Hazardous and Hazardous Materials Section (Section VII) or Utilities and Service Systems Section (Section XVI) of the checklist:

> Would the project include a new or retrofitted stormwater Treatment Control BMPs, (e.g. water quality treatment basin, constructed treatment wetlands), the operation of which could result in significant environmental effects (e.g. increased vectors and odors)?

To promote the consideration of all of the various impacts related to urban runoff and stormwater pollution as identified in the Third Term Permits, the Permittees may provide the list of permit considerations to:

- Environmental planning staff for use in preparing and reviewing CEQA documents for internal city/county projects and when reviewing CEQA documents prepared by the private sector
- Consultants and other members of the private sector for use in preparing CEQA documents for private and public sector projects
- Project applicants during the CEQA preliminary review process
- Participants attending training programs

### 7.5.3 Environmental Review Guidance for CEQA Initial Studies and CEQA Document Preparation and Review

The guidance in **Exhibit 7.I** may be used by the Permittees in evaluating the CEQA Initial Study checklist questions in Section VIII. Hydrology and Water Quality including any additional questions included by the Permittees in response to the San Diego and Santa Ana Region Permits. This guidance is also applicable to the review and preparation of CEQA documents including Negative Declarations, Mitigated Negative Declarations and EIRs. This guidance will be reviewed annually, updated as needed, and its status/use will be discussed in the Annual Progress Report.

## 7.6 Development Project Review, Approval, and Permitting

### 7.6.1 Introduction

The Third Term Permits require that the Permittees address the following elements that affect development project review, approval, and permitting

- Modify Project WQMP requirements by imposing additional BMP requirements for new development and significant redevelopment projects that fall under "Priority Project" categories.
- Review and revise standard conditions of approval and plan check procedures to ensure that the short and long-term impacts of new development and significant redevelopment on receiving water quality are minimized and that watershed protection principles are incorporated into project plans. (To support this objective, Permittees shall also review their standard conditions of approval, plan check procedures , and permit conditions to ensure that they are not in conflict with any provisions of the Santa Ana Region Permit or the San Diego Region Permit (as applicable), the DAMP, California's General Permit for Stormwater Discharges Associated with Construction Activity, California's General Permit for Stormwater Discharges Associated with Industrial Activity and adopted Total Maximum Daily Load allocations within their jurisdiction).

The Santa Ana Permit uses the term WQMP to describe the overall program that Permittees adopt to define the existing and expanded requirements for incorporating BMPs into new development and significant redevelopment. The San Diego Permit uses the term Standard Urban Stormwater Mitigation Plan (SUSMP) for the overall program requirements. The terms WQMP and SUSMP are also used to define the project-specific plan for BMPs for each new project.

Under the 1993 DAMP, Permittees throughout the County required all projects (not just Priority Projects) to prepare a WQMP to identify permanent BMPs that will be included in the project. Therefore, the WQMP terminology will continue to be used within all jurisdictions, but the revised requirements described in this **DAMP Section 7** and associated Local Implementation Plan (LIP) (**DAMP Appendix A-7**) and Model WQMP (**Exhibit 7.II**) are intended to allow Project WQMPs to be consistent with both the WQMP requirements of the Santa Ana Permit and the SUSMP requirements of the San Diego Permit.

The remainder of this section describes the processes for incorporating the new Model WQMP requirements into the project planning and approval process and modifications to conditions of approval and plan check processes to assure consistency with Third Term Permit requirements. As stated previously, a Model WQMP is provided as **Exhibit 7.II**. The Model WQMP provides guidance for the development and review of Project WQMPs.

### 7.6.2 Project Review, Approval, and Permitting Process Overview

For all new development and significant redevelopment projects meeting the minimum requirements defined herein, a Project WQMP shall be developed to define the quality and

quantity of stormwater runoff must be considered during project planning to identify permanent (post-construction) BMPs that will be included in project design, constructed as part of the project, and ultimately implemented and maintained for the life of the project. Commitments from a project or permit applicant to incorporate, implement, and maintain the BMPs must be described in a Project WQMP.

The Third Term Permits require that the new WQMP and BMP requirements be enacted based on the following schedule, prior to these dates, projects, in both jurisdictions, will be required to prepare WQMP's in accordance with the 1993 DAMP :

*Within the jurisdiction of the Santa Ana RWQCB* – Upon approval of the Model WQMP by the Executive Officer but not later than October 1, 2003. This includes new development projects defined as projects for which tentative tract or parcel map approval was not received by July 1, 2003 and new re-development is defined as projects for which all necessary permits were not issued by July 1, 2003. This does not include projects receiving map approvals after July 1, 2003 that are proceeding under a common scheme of development that was the subject of a tentative tract or parcel map approval that occurred prior to July 1, 2003.

*Within the jurisdiction of the San Diego RWQCB* – Upon adoption of each Permittees local WQMP following submittal of this Model WQMP to the RWQCB. The local WQMP must be adopted not later than August 13, 2003. This includes priority projects that have not yet begun grading or construction activities. If a Permittee determines that lawful prior approval of a project exists, whereby application of WQMP requirements to the project is infeasible, WQMP requirements need not apply to the project.

*Program Coverage and Definitions*

Project WQMPs are required for private new development and significant redevelopment projects within Permittees' jurisdictions, and equivalent public agency capital projects undertaken by the Permittees for projects that:

- Qualify as one of the Priority Project Categories listed in **Table 7-1**, regardless of project size.

- Do not qualify as one of the Priority Project Categories but meet one of the following
  - Require discretionary action that will include a precise plan of development, except for those projects exempted by the Water Quality Ordinance (as applicable)
  - Require issuance of a non-residential plumbing permit

  Such projects will be referred to as "Non-Priority Projects."

The primary difference between a Priority Project and a Non-Priority Project is that Priority Projects will be required to include Treatment Control BMPs in project design. To ensure that Priority Projects, which require the incorporation of Treatment Control BMPs, are identified as early in the planning process as possible, the Permittees will utilize a checklist to document the

**Table 7-1 Priority Projects Categories**

| |
|---|
| 1. Residential development of 10 units or more |
| 2. Commercial and industrial development greater than 100,000 square feet including parking areas |
| 3. Automotive repair shop (SIC codes 5013, 5014, 5541, 7532-7534, and 7536-7539) |
| 4. Restaurant where the land area of development is 5,000 square feet or more including parking areas (SIC code 5812) |
| 5. ***For San Diego Region -*** Hillside development greater than 5,000 square feet<br>***For Santa Ana Region -*** Hillside development on 10,000 square feet or more, which is located on areas with known erosive soil conditions or where natural slope in 25 percent or more |
| 6. Impervious surface of 2,500 square feet or more located within, directly adjacent to (within 200 feet), or discharging directly to receiving water within Environmentally Sensitive Areas[1]. |
| 7. Parking lot area of 5,000 square feet or more, or with 15 or more parking spaces, and potentially exposed to urban runoff |
| 8. ***For San Diego Region -*** Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater |

[1] Environmentally Sensitive Areas are shown in maps available from the County and cities

identification of a project as a Priority Project or a Non-Priority Project (see the Local Implementation Plan **DAMP Appendix A-7**).

*New Development* - means land disturbing activities; structural development, including construction or installation of a building or structure, the creation of impervious surfaces; and land subdivision.

*Significant Redevelopment* - means development that would create or add at least 5,000 square feet of impervious surfaces on an already developed site. Significant redevelopment includes, but is not limited to:

- Expansion of a building footprint;
- Addition to or replacement of a structure;
- Replacement of an impervious surface that is not part of a routine maintenance activity; and
- Land disturbing activities related with structural or impervious surfaces.

Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Significant redevelopment does not include trenching and resurfacing associated with utility work; resurfacing and reconfiguring surface parking lots (if no additional impervious area is added); pedestrian ramps; and replacement of damaged pavement.

New development and significant redevelopment projects may fall into one of several categories:

- Following redevelopment, the entire development (including the redeveloped area) would meet one of the Project Priority categories listed in **Table 7-1**. The project would be considered a Priority Project and require a Project WQMP including Treatment Control BMPs. Where the significant redevelopment results in an increase of less than fifty percent of the impervious surface of a previously existing development, and the existing development was not subject to Project WQMP requirements, the treatment requirements apply only to the addition, and not to the entire development.

- Following redevelopment, the entire development (including the redeveloped area) would not meet one of the Project Priority categories listed in **Table 7-1**, but would require discretionary action that will include a precise plan of development, or require issuance of a non-residential plumbing permit. The project would be considered a Non-Priority Project and require a Project WQMP but would not require Treatment Control BMPs.

- The redevelopment activity would not result in a Priority Project as listed in **Table 7-1** and would not require discretionary action that will include a precise plan of development or issuance of a non-residential plumbing permit. The project would not require a Project WQMP.

*Private Development WQMP Submittal*

The Project WQMP may be prepared and submitted at one of two different points in project planning and permitting:

- During the discretionary approval process (land use permit) of a proposed project, when the Permittee must exercise judgment or deliberation in order to approve or disapprove a development or significant redevelopment project, or

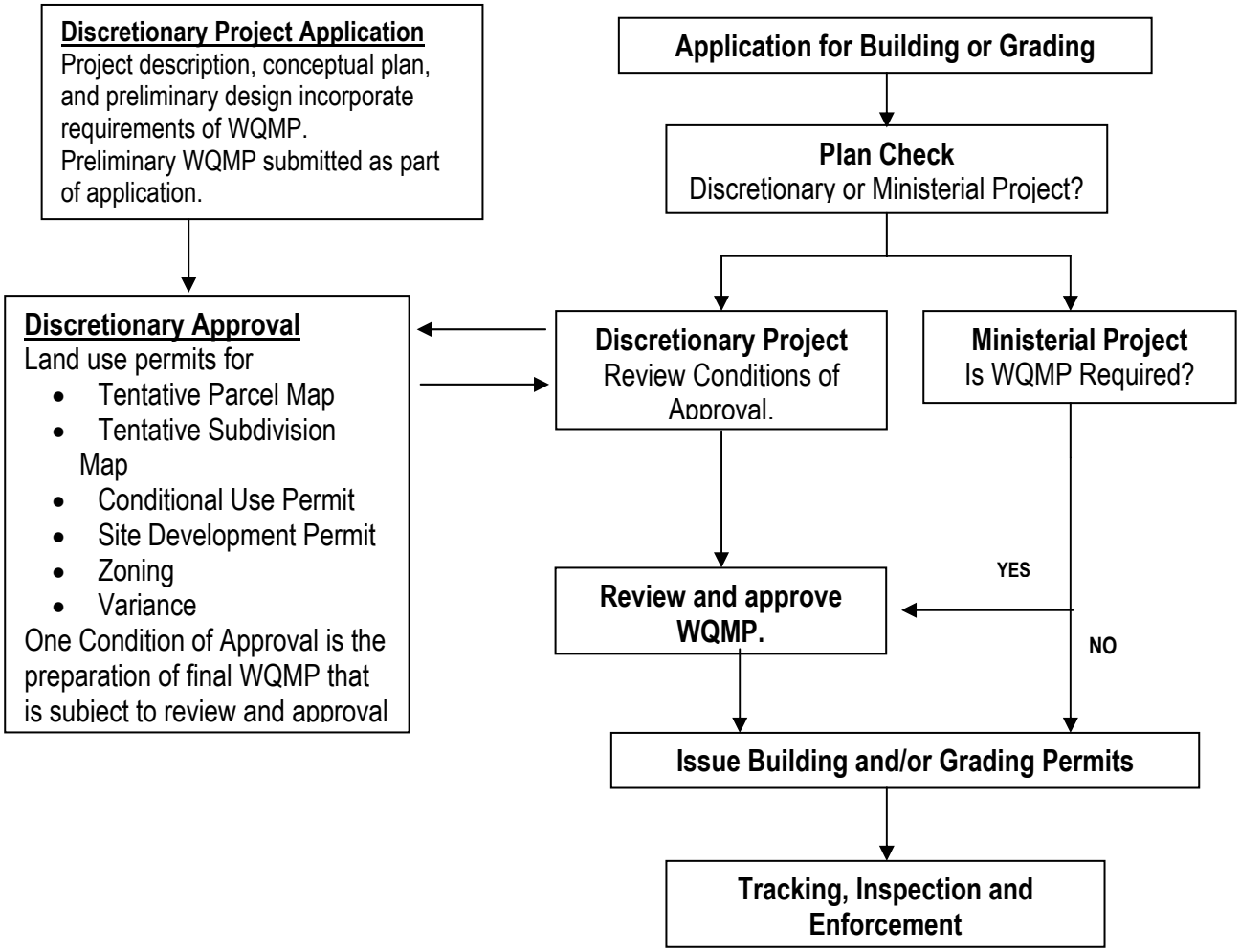
- During the ministerial approval process of issuing a grading, building, demolition, or similar "construction" permits in which only fixed standards or objective measures are applied.

**Figure 7-3** depicts the primary steps in the process of reviewing, approving, and permitting a private new development or significant redevelopment project.

A discretionary action under CEQA is defined as "an activity which requires the public agency to exercise judgment in deciding whether to approve or disapprove the particular activity, as distinguished from situations where the public agency merely has to determine whether there has been conformity with applicable ordinances or other laws."[1] For proposed projects subject to discretionary approval, the Permittees will require a preliminary or conceptual Project WQMP as part of the application for project approval (land use entitlement) unless the project is

[1] California Public Resources Code § 21080(a); CEQA Guidelines § 15357.

**Figure 7-3. Development Project Review, Approval and Permitting**




subject to a regional or watershed program. The level of detail in a preliminary or conceptual Project WQMP submitted during the land use entitlement process will depend upon the level of detail known about the overall project design at the time project approval is sought.

Ministerial actions are those where little or no judgment or deliberation by a Permittee is required. Some ministerial approvals may require that the applicant prepare a Project WQMP, whereas other ministerial approvals may not necessitate a WQMP. For example, applications for grading or building permits for projects or activities that do not meet the requirements noted in Section 7.6.2 would not require the preparation of a Project WQMP as those projects are not expected to have the long-term potential to significantly affect stormwater quality.

Many projects will be subject to discretionary approval during the planning phase (land use entitlement) and ministerial approval for subsequent grading or building permits. For such projects, Project WQMPs may be submitted initially as "preliminary" or during the

discretionary approval process and submitted as "final" prior to approval of a grading or building permit. For projects subject to and consistent with regional or watershed programs, the project may rely upon the approved regional/watershed program document during the entitlement process, and may submit the final Project WQMP documentation in the format approved by the relevant permittee prior to obtaining ministerial permit(s).

*Public Agency WQMP Submittal*

The requirement for managing the quality and quantity of stormwater runoff from new development or significant redevelopment applies equally to private sector and public agency projects meeting the minimum requirements. In many public agencies the process for planning, design, approval, and oversight of public facilities differs from the process for private sector development projects. For example, typically private development projects are regulated through a process of a development plan approval (i.e., conditions of approval); building or grading permit applications, and permit conditions. Public agency projects in comparison may undergo design review by the contracting agency of the municipality; may or may not be issued permits or similar administrative authorizations; and are then regulated through the enforcement of contract terms and approved plans and specifications.

Further, the review, approval, and inspection of public agency projects and private sector development projects are frequently performed by different municipal departments. Recognizing the differences in the process, each Permittee will incorporate the requirement for a Project WQMP into the process of planning, design, approval, and oversight of their public agency projects or provide an equivalent approach. Typically, the Permittee's design/engineering department or the design architect/engineer contractor will prepare a WQMP for a public agency project.

Project WQMPs will not be required for public agency projects consisting of routine maintenance or emergency construction activities required to protect public health and safety; interior remodeling with no outside exposure of construction materials or construction waste to stormwater; mechanical permit work; electrical permit work; and sign permit work.

There are eight categories of Priority Projects listed in **Table 7-1**. Although public agencies do not plan and design some of these categories of projects per se, public agency projects may have similar functions or characteristics or may conduct similar activities after construction is completed. Therefore, some public agency projects should be considered Priority Projects. For example, a corporation yard may include a vehicle and equipment maintenance facility, which is very similar to an automotive repair shop. Other examples are a civic center or library that is very similar in its characteristics to that of a commercial office building and a senior citizens center or a jail may have a cafeteria, which is very similar to a restaurant.

For other public agency projects that are not Priority Projects, the Permittees may decide on a project specific basis not to require a WQMP, but may elect instead to require that all routine structural Source Control BMPs applicable to the project features be identified and included in the project, and Site Design BMPs be considered where applicable. Project types include, but are not limited to:

- Parks and recreation facilities
- Public Buildings
- Streets and roadways
- Above ground drainage facilities (e.g. channels and basins)

### 7.6.3 Conditions of Approval

The Permittees will review and revise their standard conditions of approval to ensure that the standard conditions are not in conflict with any provisions of the Santa Ana Region Permit or the San Diego Region Permit (as applicable), the DAMP, California's General Permit for Stormwater Discharges Associated with Construction Activity, California's General Permit for Stormwater Discharges Associated with Industrial Activity and adopted Total Maximum Daily Load allocations within their jurisdiction.

For example, a condition requiring "sweeping or washing public access points within 30 minutes of dirt deposition" should be revised to specify that "washing" must include capture and proper disposal of all wash water. A second example is that a standard condition requiring the applicant of a retail gasoline outlet or automotive vehicle repair facility to demonstrate coverage under the General Permit for Stormwater Discharges Associated with Industrial Activity prior to issuance of a preliminary or precise grading permit should not be used. Retail gasoline outlets and automotive vehicle repair facilities are not required to comply with California's General Permit for Stormwater Discharges Associated with Industrial Activity.

To minimize the short-term and long-term impacts on receiving water quality from new development and significant redevelopment, Permittees will review and revise or supplement their standard conditions of approval that may be used for projects to include the following conditions or the equivalent, as determined appropriate:

*General Conditions*

- Prior to the issuance of any grading or building permits (*add grubbing, clearing, surface mining or paving permits as appropriate)* for projects that will result in soil disturbance of one or more acres of land, the applicant shall demonstrate that coverage has been obtained under California's General Permit for Stormwater Discharges Associated with Construction Activity by providing a copy of the Notice of Intent (NOI) submitted to the State Water Resources Control Board and a copy of the subsequent notification of the issuance of a Waste Discharge Identification (WDID) Number or other proof of filing. Projects subject to this requirement shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). A copy of the current SWPPP shall be kept at the project site and be available for County review on request.

- Prior to the issuance of any grading or building permits (add or prior to recordation upon subdivision of land if determined applicable), the applicant shall submit for review and approval a Project WQMP that:
    - Discusses regional or watershed programs (if applicable)

- Addresses Site Design BMPs (as applicable) such as minimizing impervious areas, maximizing permeability, minimizing directly connected impervious areas, creating reduced or "zero discharge" areas, and conserving natural areas
- Incorporates the applicable Routine Source Control BMPs as defined in the DAMP
- Incorporates Treatment Control BMPs as defined in the DAMP
- Generally describes the long-term operation and maintenance requirements for the Treatment Control BMPs,
- Identifies the entity that will be responsible for long-term operation and maintenance of the Treatment Control BMPS, and
- Describes the mechanism for funding the long-term operation and maintenance of the Treatment Control BMPs.

- Prior to grading or building permit close-out and/or the issuance of a certificate of use or a certificate of occupancy, the applicant shall:

  - Demonstrate that all structural best management practices (BMPs) described in the Project WQMP have been constructed and installed in conformance with approved plans and specifications,
  - Demonstrate that applicant is prepared to implement all non-structural BMPs described in the Project WQMP,
  - Demonstrate that an adequate number of copies of the project's approved Project WQMP are available for the future occupiers,
  - Submit for review and approval an Operations and Maintenance (O&M) Plan for all structural BMPs.

*Projects Adjacent to Beaches*

- During the construction phase, the applicant shall comply with the following requirements:
  - All construction materials, wastes, grading or demolition debris, and stockpiles of soil, aggregates, soil amendments, etc. shall be properly covered, stored, and secured to prevent transport into coastal waters by wind, rain, tracking, tidal erosion or dispersion.

- Grading and Drainage Plans shall be prepared with the following design objectives:

  - All surface runoff and subsurface drainage shall be directed to the nearest acceptable drainage facility, via sump pumps if necessary, as determined by the Building Official.
  - Onsite surface drainage and subdrain systems shall not discharge over the blufftop or hilltop.
  - All roof drains shall be required to connect into a tight-line drainage pipe or concrete swales that drain to the nearest acceptable drainage facility as determined by the Building Official.
  - Landscaping plans shall utilize only native, drought-tolerant landscape materials.
  - Irrigation system plans shall not include irrigation lines for the bluff-side of the parcel.

- All grading and improvements shall be made in accordance with the Grading Ordinance and to the satisfaction of the Building Official or designee. Grading shall be in substantial compliance with the approved grading plans. Surety to guarantee the completion of grading, erosion and sediment control measures shall be posted satisfactory to the Building Official.

*Projects in Hilly Areas*

- Drainage facilities discharging onto adjacent property shall be designed to imitate the manner in which runoff is presently crossing the adjacent property. Alternatively, the project applicant may obtain a drainage acceptance and maintenance agreement, suitable for recordation, from the owner of said adjacent property.

*Industrial Facilities*

- For industrial facilities subject to California's General Permit for Stormwater Discharges Associated with Industrial Activity as defined by Standard Industrial Classification (SIC) code, prior to grading or building permit close-out and/or the issuance of a certificate of use or a certificate of occupancy, the applicant shall demonstrate that coverage under the permit has been obtained providing a copy of the Notice of Intent (NOI) submitted to the State Water Resources Control Board and a copy of the notification of the issuance of a Waste Discharge Identification (WDID) Number or other proof of filing.

*Special Conditions*

- Prior to the issuance of any grading and building permits, the applicant shall include in the plans all BMPs identified in the approved WQMP and any other urban runoff and stormwater pollution control measures deemed necessary by the City/County Planning Director.

- Prior to issuance of certificates of use and occupancy or building permits for individual tenant improvements or construction permits for a tank or pipeline, uses shall be identified and, for specified uses, the applicant shall propose plans and measures for chemical management (including, but not limited to, storage, emergency response, employee training, spill contingencies and disposal). The chemical management measures shall be incorporated as an element of a Project WQMP and shall be subject to the approval of the Planning and Development Services Department and other specified agencies such as the Orange County Fire Authority, the Orange County Health Care Agency and sewering agencies (as appropriate) to ensure implementation of each agency's respective requirements. Certificates or permits may be ministerially withheld if features needed to properly manage chemicals cannot be incorporated into a previously completed building, center or complex.

### 7.6.4 Review and Approval of WQMPs

Project WQMPs may be submitted as "preliminary" during the discretionary or land use entitlement phase depending upon the level of detail known about the overall project design at the time project approval is sought. However, prior to issuance of grading or building permits, the project applicant must submit the final Project WQMP for review and approval.
The review and approval of a final Project WQMP is one of the last critical points at which a Permittee can impose conditions or standards that will minimize the impacts of urban runoff and stormwater pollution on local water resources. The Model WQMP (**Exhibit 7.II**) is expected to be used as a guide for preparation of a Project WQMP. To ensure that Priority Projects, which require the incorporation of Treatment Control BMPs, are properly identified, the Permittees will utilize a checklist to document the identification of a project as a Priority Project or a Non-Priority Project and to assure thorough and consistent reviews of Project WQMPs, the Permittees will utilize a WQMP Review Checklist (see LIP, **DAMP Appendix A-7** for the checklists). The Model WQMP may also be used to aid in review.

*WQMP Elements*

The Project WQMP is expected to address water quality BMPs applicable to the project to address pollutants or conditions of concern. The BMPs required vary for Priority Projects versus Non-Priority Projects.

The Project WQMP for a Priority Project must address:

- Regional or watershed programs (if applicable)
- Routine structural and non-structural Source Control BMPs
- Consideration of Site Design BMPs (as applicable)
- Treatment Control BMPs (Treatment Control BMP requirements may be met through either project specific (on-site) controls or regional or watershed management controls that provide equivalent or better treatment performance, subject to certain conditions described in the Model WQMP))
- The mechanism(s) by which long-term operation and maintenance of all structural BMPs will be provided.

The Project WQMP for a Non-Priority Project must address:

- Routine structural and non-structural Source Control BMPs
- Consideration of Site Design BMPs (as applicable)
- The mechanism(s) by which long-term operation and maintenance of all structural BMPs will be provided.

The categories of stormwater pollution control BMPs (Source Control, Site Design, and Treatment Control) are summarized in **Table 7- 2**, together with applicable projects and primary pollution prevention objectives of the BMPs. Each of the BMP categories is further defined in subsequent sections.

When reviewing WQMPs submitted for approval, Permittees will assess project impacts on receiving waters and potential cumulative impacts of build-out within the watershed based upon available watershed chapters of the DAMP, information learned from any CEQA documentation regarding the project, and Permittee knowledge of watershed-wide and jurisdictional problems and programs. Additionally, Permittees are to examine all identified BMPs, as a whole, address the pollutants/condition of concern identified within the WQMP.

The Project WQMP is a project planning level document and as such is not expected to contain final BMP design drawings and details. However, the project WQMP must identify and locate selected BMPs, provide design parameters including hydraulic sizing of treatment BMPs and convey final design concepts. BMP fact sheets can be used in conjunction with project-specific design parameters and sizing to convey design intent. There are a number of resources listed in the Model WQMP for Source Control, Site Design, and Treatment Control BMPs that should be considered to guide the design and implementation of the BMPs. . Fact sheets from one available reference - the 2003 California Stormwater Quality Association the California Stormwater Best Management Practice Handbook – New Development and Redevelopment are provided in the Local Implementation Plan (**DAMP Section A-7)**. The fact sheets contain detailed descriptions of each BMP, applications, advantages/disadvantages, design criteria, design procedure, and inspection and maintenance requirements to ensure optimal performance of the BMPs

**Table 7- 2. Summary of BMPs for Development/Redevelopment Projects**

| BMP Category | | Applicable Projects | Pollution Prevention Objective |
|---|---|---|---|
| **Source Control BMPs** | **Routine Non-Structural BMPs** | Required for all projects – as applicable | Prevent pollution by educating the public on proper disposal of hazardous or toxic wastes, regulatory approaches, street sweeping and facility maintenance, and detection and elimination of illicit connections and illegal dumping |
| | **Routine Structural BMPs** | Required for all projects – as applicable.<br><br>Include incorporating requirements applicable to individual priority project categories<br>• Private roads<br>• Residential driveways and guest parking<br>• Dock areas<br>• Maintenance bays<br>• Vehicle wash areas<br>• Outdoor processing areas<br>• Equipment wash areas<br>• Parking areas<br>• Roadways<br>• Fueling areas<br>• Hillside landscaping<br>• Wash water control for food preparation areas<br>• Community car wash racks | Prevent potential pollutants from contacting rainwater or stormwater runoff or to prevent discharge of contaminated runoff to the storm drain system or receiving waters.<br>Reduce the creation or severity of potential pollutant sources or to reduce the alteration of the project site's natural flow regime |

| | | |
|---|---|---|
| **Site Design BMPs** | All projects should consider implementation of Site Design BMPs | Minimize or prevent potential pollutants from contacting rainwater or stormwater runoff or to prevent discharge of contaminated runoff to the storm drain system or receiving waters. |
| **Treatment Control BMPs or Regional Program** | All priority projects – at least one Treatment Control BMP required | Remove pollutants from stormwater runoff prior to discharge to the storm drain system or receiving waters |

Projects utilizing a regional or watershed program will pre-determine BMPs as discussed in the Model WQMP, Exhibit 7,II.

*Structural Source Control BMPs*

Structural Source Control BMPs are low-technology practices designed to prevent pollutants from contacting stormwater runoff or to prevent discharge of contaminated runoff to the storm drainage system. Site-specific structural Source Control BMPs have been established for a number of common site features such as outdoor material storage areas, trash storage, outdoor loading/unloading docks, outdoor repair and maintenance areas, outdoor washing areas, outdoor fueling areas, and parking lots. Typical required design features include berms, covers, screens, signage, grading, sanitary sewer connections, and emergency storm drain seals. Fact sheets detailing these BMPs are presented in the Local Implementation Plan (**DAMP Section A-7).** The fact sheets include design criteria established to ensure effective implementation of the required Source Control BMPs.

*Site Design BMPs*

Site Design BMPs prevent pollution of stormwater by minimizing the introduction of pollutants and conditions of concern that may result in significant impacts generated from site runoff to the stormwater conveyance system. Site Design BMPs should be considered for all projects including regional or watershed programs. Site Design BMPs include the following design features and considerations:

- Control Peak Stormwater Runoff Discharge Rates
- Minimize Project's Impervious Footprint
- Conserve Natural Areas
- Minimize Directly Connected Impervious Areas (DCIAs)
- Protect Slopes and Channels

Fact sheets are presented Local Implementation Plan (**DAMP Appendix A-7)**. The fact sheets include design criteria established to ensure effective implementation of the required Site Design BMPs.

*Treatment Control BMPs*

Treatment Control BMPs are engineered technologies designed to remove pollutants from stormwater runoff and are required to augment Source Control and Site Design BMPs for Priority Projects to reduce pollution from stormwater discharges. The type of Treatment

Control BMP(s) to be implemented at a site depends on a number of factors including: type of pollutants in the stormwater runoff, volume or flow of stormwater runoff to be treated, project site conditions, receiving water conditions, and General Industrial Permit requirements, when applicable. Land requirements, and costs to design, construct and maintain Treatment Control BMPs vary by Treatment Control BMP.

Fact sheets are presented the Implementation Plan (**DAMP Appendix A-7**). The fact sheets include design criteria established to ensure effective implementation of the required Treatment Control BMPs.

*Regional or Watershed BMPs*

Regional or watershed BMPs that are designed to address runoff from new development and significant redevelopment projects may be used to meet the treatment BMP requirement. If this method is selected, the BMPs must be designed to provide equivalent treatment objectives for the new development and significant redevelopment projects for the entire area or the new development and significant redevelopment projects served by the regional or watershed BMPs. Detailed analysis (such as detailed planning and modeling) should be employed and cross-jurisdictional issues must be clearly defined and coordinated.

*BMP Design Standards*

An intensive search was conducted in order to find agencies that may have developed standard plans (details) for Treatment Control BMPs. The search concluded that many entities throughout the country that have developed graphic depictions of Treatment Control BMPs, but no standard plan-level details have been developed at this time.

The California Department of Transportation (Caltrans) has "as-built" drawings for their pilot treatment BMPs. The "as-built" drawings are available directly from Caltrans. Design guidelines and detailed schematics are available from several sources including EPA (various dates), the Urban Drainage and Flood Control District (Denver Colorado, September 1999), and the Caltrans Project Planning and Design Guide (May 2002). These references provide schematics for biofilters (grass swales), extended detention basins, sand filters, wetlands, and other treatment BMPs. No standard BMP plans have been adopted by any of the Permittees.

One reference for designing permanent BMPs is the 2003 California Stormwater Best Management Practice Handbook – New Development and Redevelopment . Many other resources available for consultation are listed in the Model WQMP (**Exhibit 7.II Attachment D**).

### 7.6.5 Plan Check: Issuance of Grading or Building Permits

Once a project reaches the plan check phase, the applicant must have an approved final Project WQMP, since the construction plans submitted by the applicant for plan check must incorporate all of the structural BMPs identified in the approved Project WQMP. Therefore, the Permittees will encourage (but not necessarily require) applicants to obtain approval of the project's final Project WQMP prior to submitting construction plans for plan check.

*Standard Notes for Plan Sheets*

Prior to the issuance of a grading or building permit, Permittees shall require the permit applicant to include the following as general or special notes on the plan sheets for new development or significant redevelopment projects:

- Sediment from areas disturbed by construction shall be retained on site using structural controls to the maximum extent practicable.
- Stockpiles of soil shall be properly contained to eliminate or reduce sediment transport from the site to streets, drainage facilities or adjacent properties via runoff, vehicle tracking, or wind.
- Appropriate BMPs for construction-related materials, wastes, spills or residues shall be implemented to eliminate or reduce transport from the site to streets, drainage facilities, or adjoining properties by wind or runoff.
- Runoff from equipment and vehicle washing shall be contained at construction sites unless treated to reduce or remove sediment and other pollutants.
- All construction contractor and subcontractor personnel are to be made aware of the required best management practices and good housekeeping measures for the project site and any associated construction staging areas.
- At the end of each day of construction activity all construction debris and waste materials shall be collected and properly disposed in trash or recycle bins.
- Construction sites shall be maintained in such a condition that a storm does not carry wastes or pollutants off the site. Discharges other than stormwater (non-stormwater discharges) are authorized under California's General Permit for Storm Water Discharges Associated with Construction Activity only where they do not cause or contribute to a violation of any water quality standard and are controlled through implementation of appropriate BMPs for elimination or reduction of pollutants. Non-stormwater discharges must be eliminated or reduced to the extent feasible.

  Potential pollutants include but are not limited to: solid or liquid chemical spills; wastes from paints, stains, sealants, solvents, detergents, glues, lime, pesticides, herbicides, fertilizers, wood preservatives, and asbestos fibers, paint flakes or stucco fragments; fuels, oils, lubricants, and hydraulic, radiator or battery fluids; concrete and related cutting or curing residues; floatable wastes; wastes from engine/equipment steam cleaning or chemical degreasing; wastes from street cleaning; and super-chlorinated potable water from line flushing and testing.

  During construction, disposal of such materials should occur in a specified and controlled temporary area on-site physically separated from potential stormwater runoff, with ultimate disposal in accordance with local, state and federal requirements.

- Discharging contaminated groundwater produced by dewatering groundwater that has infiltrated into the construction site is prohibited. Discharging of contaminated soils via

surface erosion is also prohibited. Discharging non-contaminated groundwater produced by dewatering activities requires a National Pollutant Discharge Elimination System (NPDES) permit from the respective State Regional Water Quality Control Board.

*Plan Check for Projects with Land Use Permits*

For projects with land use permits, the environmental (CEQA) documentation (including the Mitigation Monitoring and Reporting Program), the conditions of approval, and the approved Project WQMP shall be reviewed for an understanding of the water quality issues and structural BMPs required. Construction plans shall be reviewed for conformity with the project's approved final Project WQMP. If the selected BMPs were approved in concept during the land use entitlement process, the applicant shall submit detailed construction plans showing locations and design details of all BMPs that are in substantial conformance with the preliminary approvals. The construction plans shall be reviewed to assure that the plans are consistent with the BMP design criteria and guidance provided in **Exhibit 7.II**.

*Plan Check for Projects with By-Right Zoning (Ministerial Projects)*

For projects with by-right zoning or projects that do not need discretionary review, applicants will typically submit a grading or building permit application consisting of a proposed Project WQMP and construction plans that incorporate the BMPs included in the proposed Project WQMP. The Permittee shall first review the proposed Project WQMP for conformity with the requirements described in **Exhibit 7.II**. The approved Project WQMP shall then be used in reviewing the construction plans for consistency with the BMP design criteria and guidance provided in **Exhibit 7.II**.

*Design Review for Public Agency Projects*

Prior to initiating grading or construction activities, Permittees shall ensure that the construction plans for public works projects reflect the structural BMPs described in the approved Project WQMP. The design review for public agency projects shall include a review of construction plans and specifications for conformity with the approved Project WQMP and for consistency with the BMP design criteria and guidance provided in **Exhibit 7.II.**

*Plan Check for Projects with Alternative Treatment Control BMPs (see **Exhibit 7.II, Section 3.3.3**)*

An applicant may choose to incorporate into a Project WQMP and construction plans Treatment Control BMPs that are not included in the Treatment Control BMP Selection Matrix provided in the Model WQMP. If an applicant chooses to utilize Alternative Treatment Control BMPs, the Permittee shall require the project's engineer of record to certify the Alternative Treatment Control BMPs as being equally or more effective in pollutant reduction than comparable BMPs found in the Model WQMP.

### 7.6.6 Permit Closeout, Certificates of Use, and Certificates of Occupancy

The Project WQMP continues with the property after the completion of the construction phase and the Permittees may require that the terms, conditions and requirements be recorded with the County Recorder's office by the property owner or any successive owner as authorized by the Water Quality Ordinance. In lieu of recordation the Permittee may require the Project WQMP to include notice of transfer responsibility. The end of the construction phase therefore represents a transition from the New Development/Significant Redevelopment Program to the Existing Development Program (**DAMP Section 9**). Accompanying this is a close out of permits and issuance of certificates of use and occupancy. The Permittees will use this juncture to assure satisfactory completion of all requirements in the Project WQMP by requiring the applicant to:

- Demonstrate that all structural BMPs described in the Project WQMP have been constructed and installed in conformance with approved plans and specifications,
- Prepare and submit for review and approval by the Permittee an O&M Plan for all structural BMPs,
- Demonstrate that a mechanism or agreement acceptable to the Permittee has been executed for the long-term funding and performance of BMP operation, maintenance, repair, and/or replacement.
- Demonstrate that the applicant is prepared to implement all non-structural BMPs described in the Project WQMP,
- Demonstrate that an adequate number of copies of the Project WQMP are available onsite, and
- For industrial facilities subject to California's General Permit for Stormwater Discharges Associated with Industrial Activity as defined by Standard Industrial Classification (SIC) code, demonstrate that coverage has been obtained by providing a copy of the Notice of Intent (NOI) submitted to the State Water Resources Control Board and a copy of the notification of the issuance of a Waste Discharge Identification (WDID) Number.

An approved Project WQMP defines the permanent (post-construction) BMPs that will be implemented to provide long-term runoff management once the project is operational or occupied, and also describes the mechanism by which long-term operation and maintenance will be provided. A structural BMP is not considered effective unless a mechanism is in place to provide for long-term reliability, which is achieved through proper operation and maintenance. Therefore, once construction of a new development or significant redevelopment project is complete, assurance is required for the long-term operation and maintenance of structural BMPs, and most particularly for Treatment Control BMPs.

An O&M Plan for structural BMPs will be prepared by the applicant for private sector projects or by a Permittee's design/engineering department or the design architect/engineer contractor

for public agency projects. At a minimum, annual inspection and maintenance of all structural BMPs shall be required.

The O&M Plan that is prepared by the applicant for private sector projects shall describe and/or include:

- Structural BMPs
- Employee responsibilities and training for BMP operation and maintenance
- Operating schedule
- Maintenance frequency and schedule
- Specific maintenance activities
- Required permits from resource agencies, if any
- Forms to be used in documenting maintenance activities
- Recordkeeping requirements (at least 5 years)

At a minimum, an annual inspection frequency will be established for all structural BMPs including inspection and performance of any required maintenance prior to the start of the rainy season.

The ownership, operation, and maintenance of structural BMPs may be the responsibility of a private entity or a public agency (for example, a Permittee) under various arrangements and with various funding sources. The responsibility to provide for the long-term operation and maintenance of structural BMPs associated with private development projects may:

- Remain with a private entity (property owner, home owners association, etc.); or
- Be transferred to a public entity (e.g., a city, county, special district, etc.) through dedication of the property; or
- Be transferred to a public entity, or another private party through a contract.

Following satisfactory inspection, the Permittee will accept structural BMPs within public right-of-ways, or on land dedicated to public ownership. Upon acceptance, responsibility for operation and maintenance will transfer from the developer or contractor to the appropriate Permittee department, including the funding mechanism identified in the approved Project WQMP. If a property owner or a private entity, such as a homeowners association (HOA), retains or assumes responsibility for operation and maintenance of structural BMPs, the Permittee shall require access for inspection through an agreement.

If the Permittee will be responsible for operating and maintaining structural BMPs on private property, an easement will be established to allow for entry and proper management of the BMPs. Such access easements shall be binding throughout the life of the project, or until the BMPs requiring access are acceptably replaced with a BMP not requiring access. Funding for the long-term operation and maintenance of structural BMPs will be front-funded, or otherwise

guaranteed via mechanisms such as approved assessment districts, or other funding mechanisms.

*Public Agency Projects*

For public agency projects, upon completion of construction when contract close-out occurs the responsibility for operation and maintenance of the structural BMPs will transfer from the contractor to the appropriate Permittee department and become part of the Municipal Activities Program (**DAMP Section 5**). The Permittee has the authority to approve the transfer of structural BMPs to any other public entity within its jurisdiction and shall negotiate satisfactory operation and maintenance standards with the public agencies accepting the operation and maintenance responsibilities. Alternatively, the responsibility for the operation and maintenance of structural BMPs may be transferred to a private entity through contracts or lease agreements. In any such transfer agreement, the Permittee shall be identified as a third-party beneficiary empowered to enforce maintenance agreements.

## 7.7 Post Construction BMP Inspection and Verification

Verification of the implementation and O&M of structural and non-structural BMPs will be performed by the Permittee. Assessment of BMP effectiveness will take place during verification.

The City/County will perform verification at 90% of developments with approved Project WQMPs. The number of verifications necessary to achieve the above goal will be based on either the total area of approved Project WQMP projects, or the total number of Project WQMPs approved. The implementation of BMPs, and ongoing maintenance of BMPs by the mechanisms described in the Project WQMP will be verified.

Verification of BMP implementation and ongoing O&M will be conducted by inspection, self-certifications, surveys, or other equally effective approaches. An assessment report will be produced each year describing BMP implementation and ongoing O&M effectiveness, for submittal with the Permittee's annual progress report.

Verification of BMP implementation of Public Agency Projects will be incorporated into each Permittees Municipal Activities Program.

## 7.8 Model Program Training and Outreach

Education and training of municipal and/or other agency staff is one of the keys to a successful stormwater program. To assist the responsible municipal and private development staff in understanding the Model Program, two training modules are currently being developed and will be held by the Principal Permittee (**DAMP Appendix B-7**).

In addition to the Permittee sponsored training, the Permittees are also encouraged to attend training seminars or workshops related to stormwater management and water quality conducted by other organizations.

### 7.8.1 Training Modules

Two training modules have been prepared that cover different aspects of the Model Program. These modules are provided in **DAMP Appendix B-7**.

*New Development/Significant Redevelopment Program Management (**DAMP Appendix B, Exhibit B-7.I**)*

This training module is generally targeted for Permittee Stormwater Program managers and the managers of a Permittee's planning and building departments. It provides an overview of the Stormwater Program as it pertains to a Permittee's General Plan, the preparation and review of environmental documents (Initial Studies, EIRs, EISs, Negative Declarations, Mitigated Negative Declarations, etc.), conditions of approval for projects, the review of Project WQMPs, plan check, and permit closeout. The training module also briefly describes a Permittee's responsibility for verifying and inspecting permanent BMPs and for assessing the effectiveness of the New Development/Significant Redevelopment Program element.

*Project Planning and Design: Environmental Review, Planning and Permitting, and WQMP Development (**DAMP Appendix B, Exhibit B.7.II**)*

This training module is generally targeted for planners, plan checkers, developers and engineers, and will address: the laws and regulations applicable to new development and significant redevelopment; the connection between new development and significant redevelopment and water quality; how to review and prepare CEQA compliance documents with regard to urban runoff and stormwater pollution effects, how to develop and review a Project WQMP; and how to design and incorporate into a project Source Control, Site Design and Treatment Control BMPs to minimize impact to receiving waters.

## 7.9 Program Effectiveness Assessment

The overall Program Effectiveness Assessment (PEA) serves as the foundation for the submittal of the Annual Progress report that is submitted each year to the Principal Permittee and subsequently to the Regional Boards and serves as the basis for evaluating each municipality's individual new development and significant redevelopment efforts (See **DAMP Appendix C-7**).

By completing the effectiveness assessment, the Permittees will each have a baseline by which they can compare subsequent evaluations and identify trends. This information can then be used to determine where modifications within the program may be necessary and ensures that the iterative evaluation and improvement process is applied to the program component and used as an effective management tool.

**EXHIBIT 7.II**

# MODEL WATER QUALITY MANAGEMENT PLAN (WQMP)

REVISED July 22, 2003

**MODEL WATER QUALITY MANAGEMENT PLAN (WQMP)**

## 7.II - 1.0 INTRODUCTION

The Model Water Quality Management Plan (Model WQMP) has been developed to address post-construction urban runoff and stormwater pollution from all new development and significant redevelopment projects. The goal for use of the Model WQMP is to achieve practicable and enforceable policies to minimize the effects of urbanization on site hydrology, urban runoff flow rates or velocities and pollutant loads. This goal may be achieved through site-specific project-based controls, or a combination of project-based and regionally or watershed-based controls.

This Model WQMP identifies appropriate controls, commonly referred to as Best Management Practices (BMPs), for all applicable projects and will be reviewed and approved by the Santa Ana Regional Water Quality Control Board. The Santa Ana Regional Boardwill solicit public review and comment prior to approval. The San Diego Regional Water Quality Control Board will review the Model WQMP for compliance with the NPDES Permit (Order R9-2002-001). Permittees are required to adopt their own local WQMP (see **DAMP, Appendix A-7**) based on the Regional Board-approved Model WQMP and may adapt the Model WQMP for local conditions. The requirements apply to both private and public agency projects.

Using the local WQMP as a guide, each Permittee will approve project-specific Water Quality Management Plans (Project WQMPs) as part of the development plan and entitlement approval process or the ministerial permit approval process for Priority and Non-Priority Projects as defined in **DAMP Section 7.6** and **Table 7.II-1**. New development and significant redevelopment projects are required to develop and implement a Project WQMP that includes BMPs. Depending upon the project size and characteristics, these may include:

- Consideration of Site Design BMPs
- Incorporation of all applicable Source Control BMPs
- Incorporation of project-based Treatment Control BMPs; and/ or participation in an approved regional or watershed management program as defined in Section 7-II.3.3.3 of this document in the affected watershed.

Descriptions and examples of the above BMP types are provided later within this document.

This model provides requirements for two types of new development and significant redevelopment projects:

- Priority Projects (Section 7.II - 3.0)
- Non-Priority Projects (Section 7.II - 4.0)

A project is a priority project if it meets any of the following criteria:

***Table 7.II-1***
***Priority Projects Categories***

| | |
|---|---|
| 1. | Residential development of 10 units or more |
| 2. | Commercial and industrial development greater than 100,000 square feet including parking area |
| 3. | Automotive repair shops (SIC codes 5013, 5014, 5541, 7532-7534, and 7536-7539) |
| 4. | Restaurants where the land area of development is 5,000 square feet or more including parking area (SIC code 5812) |
| 5. | *For San Diego Region* - Hillside development greater than 5,000 square feet<br><br>*For Santa Ana Region* - Hillside development on 10,000 square feet or more, which are located on areas with known erosive soil conditions or where natural slope is twenty-five percent or more |
| 6. | Impervious surface of 2,500 square feet or more located within, directly adjacent to (within 200 feet), or discharging directly to receiving waters within Environmentally Sensitive Areas |
| 7. | Parking Lots 5,000 square feet or more, or with 15 parking spaces or more, and potentially exposed to urban stormwater runoff |
| 8. | *For San Diego Region* - Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater |

Definitions of the above terms and conditions are located in **Attachment E.**

All priority new development and significant redevelopment projects are required to:

- Incorporate and implement all Source Control BMPs (routine structural and routine non-structural) unless not applicable to the project due to project characteristics, and document clearly why any applicable Source Control BMP was not included.

- Consider and implement Site Design BMPs where applicable and feasible, and document those BMPs included; and

- Either implement Treatment Control BMPs, including a selection of such BMPs into the project design; or participate in or contribute to an acceptable regional or watershed management program as defined in Section 7-II.3.3.3 of this document. Projects participating in a regional or watershed management program will also implement Source Control BMPs and Site Design BMPs consistent with the approved program.

- The combination of Source Control, Site Design, and Treatment Control BMPs or regional or watershed programs must adequately address all identified pollutants of concern.

All Non-Priority Projects are required to:

- Implement all Source Control BMPs (routine structural and routine non-structural) unless not applicable to the project due to project characteristics and document clearly why any applicable Source Control BMP was not included; and

- Consider and implement all Site Design BMPs where applicable and feasible.

In the instance where only a project feature falls into a priority project category, such as a 6,000 sq. ft. parking lot for an industrial development that is less than 100,000 sq. ft., only the parking lot feature is subject to Model WQMP requirements.

The Project WQMP must be completed as follows:

- For projects not participating in a regional or watershed program the Project WQMP must be completed either prior to discretionary project approval or ministerial permit, (grading or building) issuance for discretionary projects, and prior to ministerial permit issuance for projects requiring only these types of permits.

- For projects participating in regional or watershed programs the regional or watershed program may be relied upon during the discretionary review process subject to a discussion of how the project will participate in the program, but a site specific Project WQMP must be completed prior to permit issuance.

Requirements of the Project WQMP shall be incorporated into project design and shown in the plans.

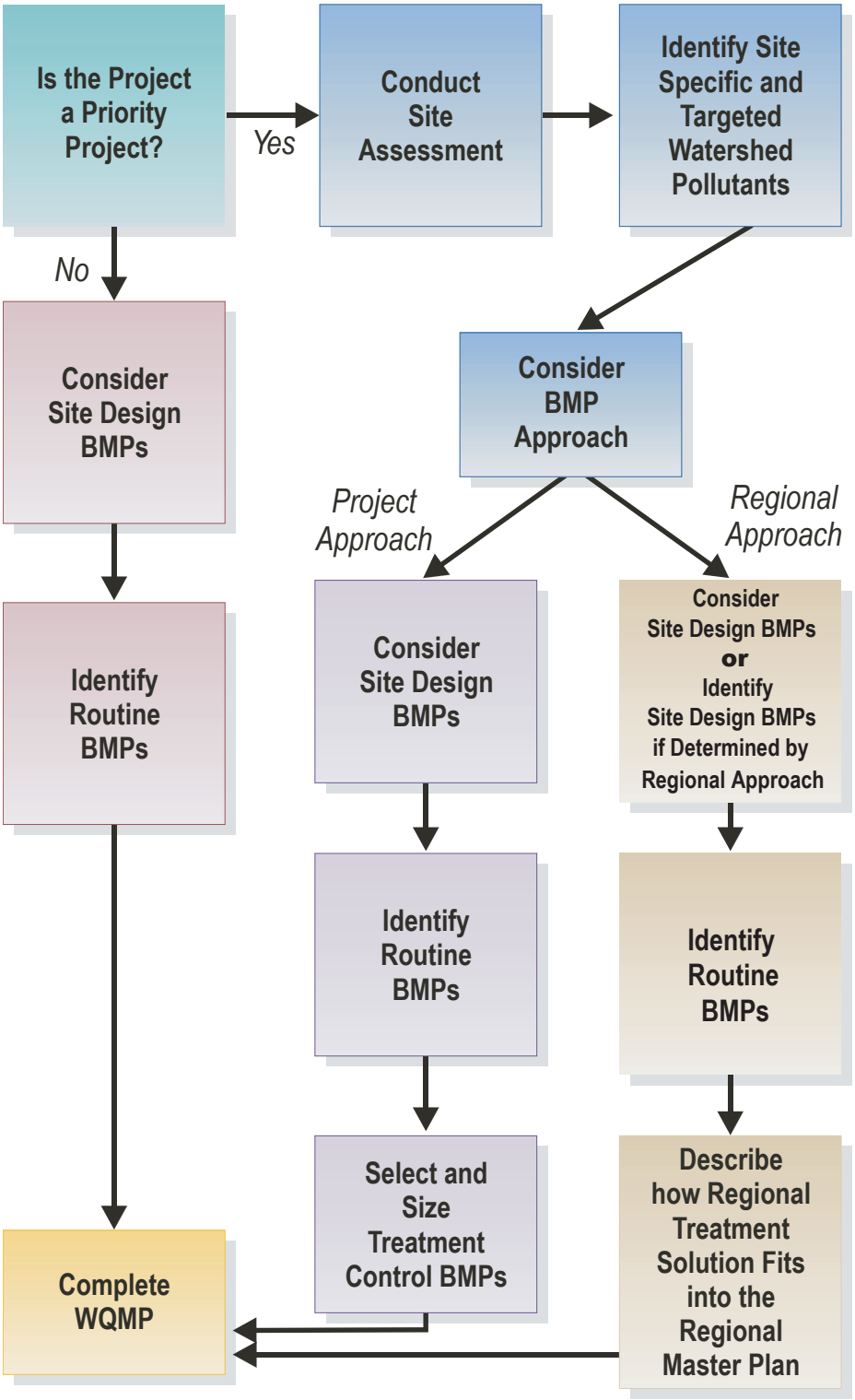
Departments carrying out public agency projects that are not required to obtain permits shall be responsible for ensuring Model WQMP requirements are incorporated into the project design and shown on the plans prior to bidding for construction contracts, or equivalent. Project WQMP requirements will be incorporated into the design of public agency projects and shown on the plans before allowing the project to commence.
***Limited Exclusion***: Trenching and resurfacing work associated with utility projects are not considered Priority Projects. Parking lots, buildings, and other structures associated with utility projects are subject to Model WQMP requirements if one or more of the criteria for the above categories are met.

## 7.II - 2.0 WQMP PREPARATION

Several steps are involved in completing an approvable Project WQMP for new development or significant redevelopment projects. **Figure 7.II-1** displays the implementation steps and decision steps that must be followed to successfully complete a Project WQMP.

***Figure 7.II-1***

***Development Planning and WQMP Preparation Steps***



## 7.II - 3.0 PRIORITY PROJECT WQMP PREPARATION

Priority new development or significant redevelopment projects perform the following steps for Project WQMP preparation:

- Site assessment (Section 7.II - 3.1)
- Identification of pollutants and hydrologic conditions of concern (Section 7.II - 3.2)
- Consideration of Site Design BMPs (Section 7.II - 3.3.1.)
- Incorporation of Source Control BMPs (Section 7.II - 3.3.2)
- Selection of regional or project–based approach to Treatment Control BMPs (Section 7.II - 3.3.3)
- Selection, sizing, and incorporation of Treatment Control BMPs (Section 7.II - 3.3.4)

### 7.II - 3.1 Site Assessment

Site assessment involves compiling the following:

- Planning Area/Community Name: Provide exhibit of subject and surrounding planning areas in sufficient detail to allow project location to be plotted on a base map of the Permittee
- Site specifics such as general and specific location, site address, and size (acreage to the nearest 1/10 acre)
- Watershed name
- Site characteristics, including description of site drainage and how it ties with drainage of surrounding property. Reference the Project WQMP's Plot Plan showing drainage flow arrows and how drainage ties to drainage of surrounding property

## 7.II - 3.2 Identification of Pollutants and Hydrologic Conditions of Concern

Priority project proponents shall use these guidelines to identify pollutants of concern from a development, potential pollutants of concern, and conditions of concern for which they need to mitigate or protect against. Once identified, appropriate control measures for these pollutants and conditions are specified in Section 7.II - 3.3.

Site design and source control measures are based on pollutants commonly associated with the proposed project land uses type (see **Table 7.II-2**). The combination of site design, source control and on-site treatment Control BMPs or regional and watershed programs are also required to address a project's expected or potential pollutants of concern.

### 7.II - 3.2.1 General Categories of Pollutants of Concern

Urban runoff and stormwater pollution from a developed site has the potential to contribute pollutants, including oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens from the municipal storm drain system to tributary receiving waters. For the purpose of identifying pollutants of concern and associated stormwater BMPs, pollutants are grouped in nine general categories:

- ***Bacteria and Viruses*** – Bacteria and viruses are ubiquitous microorganisms that thrive under certain environmental conditions. Their proliferation is typically caused by the transport of animal or human fecal wastes from the watershed. Water, containing excessive bacteria and viruses can alter the aquatic habitat and create a harmful environment for humans and aquatic life. Also, the decomposition of excess organic waste causes increased growth of undesirable organisms in the water.

- ***Metals*** – Primary source of metal pollution in stormwater are typically commercially available metals and metal products. Metals of concern include cadmium, chromium, copper, lead, mercury, and zinc. Lead and chromium have been used as corrosion inhibitors in primer coatings and cooling tower systems metals are also raw material components in non-metal products such as fuels, adhesives, paints, and other coatings. At low concentrations naturally occurring in soil, metals are not toxic. However, at higher concentrations, certain metals can be toxic to aquatic life. Humans can be impacted from contaminated groundwater resources, and bioaccumulation of metals in fish and shellfish. Environmental concerns, regarding the potential for release of metals to the environment, have already led to restricted metal usage in certain applications.

- ***Nutrients*** – Nutrients are inorganic substances, such as nitrogen and phosphorus. They commonly exist in the form of mineral salts that are either dissolved or suspended in water. Primary sources of nutrients in urban runoff are fertilizers and eroded soils. Excessive discharge of nutrients to water bodies and streams can cause excessive aquatic algae and plant growth. Such excessive production, referred to as cultural eutrophication, may lead to excessive decay of organic matter in the water body, loss of oxygen in the water, release of toxins in sediment, and the eventual death of aquatic organisms.

- ***Pesticides*** – Pesticides (including herbicides) are chemical compounds commonly used to control nuisance growth or prevalence of organisms. Excessive application of a pesticide may result in runoff containing toxic levels of its active component.

- ***Organic Compounds*** – Organic compounds are carbon-based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons. Organic compounds can, at certain concentrations, indirectly or directly constitute a hazard to life or health. When rinsing off objects, toxic levels of solvents and cleaning compounds can be discharged to storm drains. Dirt, grease, and grime retained in the cleaning fluid or rinse water may also adsorb levels of organic compounds that are harmful or hazardous to aquatic life.

- ***Sediments*** – Sediments are soils or other surficial materials eroded and then transported or deposited by the action of wind, water, ice, or gravity. Sediments can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth.

- ***Trash and Debris*** – Trash (such as paper, plastic, polystyrene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste products on the landscape. The presence of trash and debris may have a significant impact on the recreational value of a water body and aquatic habitat. Excess organic matter can create a high biochemical oxygen demand in a stream and thereby lower its water quality. In addition, in areas where stagnant water exists, the presence of excess organic matter can promote septic conditions resulting in the growth of undesirable organisms and the release of odorous and hazardous compounds such as hydrogen sulfide.

- ***Oxygen-Demanding Substances*** – This category includes biodegradable organic material as well as chemicals that react with dissolved oxygen in water to form other compounds. Proteins, carbohydrates, and fats are examples of biodegradable organic compounds. Compounds such as ammonia and hydrogen sulfide are examples of oxygen-demanding compounds. The oxygen demand of a substance can lead to depletion of dissolved oxygen in a water body and possibly the development of septic conditions.

- ***Oil and Grease*** – Oil and grease are characterized as high-molecular weight organic compounds. Primary sources of oil and grease are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids. Introduction of these pollutants to the water bodies are very possible due to the wide uses and applications of some of these products in municipal, residential, commercial, industrial, and construction areas. Elevated oil and grease content can decrease the aesthetic value of the water body, as well as the water quality.

### 7.II - 3.2.2 Identify Pollutants from the Project Area

Using **Table 7.II-2**, identify pollutants that are anticipated to be generated, or have a potential to be generated from the proposed priority project land use categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern. Site-specific conditions must also be considered as additional pollutant sources, such as legacy pesticides or nutrients in site soils as a result of past agricultural practices.

### 7.II - 3.2.3 Identify Pollutants of Concern

To identify pollutants of concern in receiving waters, each priority project proponent shall, at a minimum, do the following:

1. , For each of the proposed project discharge points, identify the receiving water for each point of discharge and all water bodies downstream of the receiving water, using hydrologic unit basin numbers as identified in the most recent version of the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) prepared by the State Water Resources Control Board; the Water Quality Control Plan for the Santa Ana Basin prepared by the Santa Ana Regional Water Quality Control Board; or the Water Quality Control Plan for the San Diego Basin[1], prepared by the San Diego Regional Water Quality Control Board.

2. Identify each receiving water identified above that is listed on the most recent list of Clean Water Act Section 303(d) impaired water bodies (**Table 7.II-3**). List any and all pollutants for which the receiving waters are impaired. (**Table 7.II-3)** and identify each Clean Water Act Section 303 9d) impaired water body that is downstream of the receiving waters identified above. .

Compare the list of pollutants for which the receiving waters are impaired with the pollutants anticipated to be generated by the project (as discussed in Section 7.II.3.2.2).

**Primary Pollutants of Concern** - Any pollutants identified by **Table 7.II-2**, which have also been identified as causing impairment of receiving waters

**Other Pollutants of Concern** - Those pollutants identified using **Table 7.II-**2 which have not been identified as causing impairment of receiving waters.

Further information on pollutants of concern may also be available from the CEQA analysis of the project (e.g., project-specific pollutant evaluations in Environmental Impact Reports) and this site-specific information should be used to supplement, or in some cases supercede, the information in **Table 7.II-2**. Watershed planning documents should also be reviewed for identification of specific implementation requirements that address pollutants of concern.

Salinity, total dissolved solids (TDS), and chlorides are listed within the above-referenced

[1] http://www.swrcb.ca.gov/~rwqcb9/Programs/Planning_and_Services/SD_Basin/sd_basin.html

303(d) tables, but are not addressed in this Model WQMP, as they are not commonly of concern in typical development urban runoff and stormwater pollution.

*Table 7.II-2*
*Anticipated and Potential Pollutants Generated by Land Use Type*

| Priority Project Categories and/or Project Features | General Pollutant Categories | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Bacteria/Virus | Heavy Metals | Nutrients | Pesticides | Organic Compounds | Sediments | Trash & Debris | Oxygen Demanding Substances | Oil & Grease |
| **Detached Residential Development** | X | | X | X | | X | X | X | X |
| **Attached Residential Development** | P | | X | X | | X | X | P (1) | P (2) |
| **Commercial/ Industrial Development >100,000 ft$^2$** | P (3) | | P (1) | P (1) | P (2) | P (1) | X | P (1) | X |
| **Automotive Repair Shops** | | X | | | X (4) | | X | | X |
| **Restaurants** | X | | | | | | X | X | X |
| **Hillside Development >5,000 ft$^2$ In SDRWQCB** | | | X | X | | X | X | X | X |
| **Hillside Development >10,000 ft$^2$ In SARWQCB** | | | X | X | | X | X | X | X |
| **Parking Lots** | | X | P (1) | P (1) | | P (1) | X | P (1) | X |
| **Streets, Highways & Freeways** | | X | P (1) | P (1) | X (4) | X | X | P (1) | X |

X = anticipated.
P = potential
(1) A potential pollutant if landscaping or open area exist on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

**Table 7.II-3**
**Summary of the 2002 303(d) Listed Water Bodies and Associated Pollutants of Concern for Orange County***

| Region | Water Body | Watershed | Pollutant | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Bacteria Indicators/ Pathogens | Metals | Nutrients | Pesticides | Toxicity | Trash | Salinity/TDS/ Chlorides | Turbidity |
| Region 8 Santa Ana | Anaheim Bay | C | | X | | X | | | | |
| | Bolsa Chica | | | X | | | | | | |
| | Buck Gully Creek | H | X | | | | | | | |
| | Huntington Beach State Park | C | X | | | | | | | |
| | Huntington Harbour | D | X | X | | X | | | | |
| | Los Trancos Creek (Crystal Cove Creek) | H | X | | | | | | | |
| | Newport Bay, Lower | G | | X | | X | | | | |
| | Newport Bay, Upper (Ecological Reserve) | G | | X | | X | | | | |
| | Orange County Beaches | Varies | | | | | | X | | |
| | San Diego Creek, Reach 1 | F | X | | | X | | | | |
| | San Diego Creek, Reach 2 | F | | X | | | X | | | |
| | Seal Beach | A | X | | | | | | | |
| | Silverado Creek | E | X | | | | | | X | |
| Region 9 San Diego | Aliso Creek (Mouth) | J | X | | | | | | | |
| | Aliso Creek (20 Miles) | J | X | | X | | X | | | |
| | Dana Point Harbor | K | X | X | | | | | | |
| | Pacific Ocean Shoreline, Aliso Beach HSA | J | X | | | | | | | |
| | Pacific Ocean Shoreline, Dana Point HSA | K | X | | | | | | | |
| | Pacific Ocean Shoreline, Laguna Beach and San Joaquin Hills HSAs | I | X | | | | | | | |
| | Pacific Ocean Shoreline, Lower San Juan HSA | L | X | | | | | | | |
| | Pacific Ocean Shoreline, San Clemente, San Mateo, and San Onofre HSAs | M | X | | | | | | | |
| | Prima Deshecha Creek | M | | | X | | | | | X |
| | San Juan Creek (Lower one Mile) | L | X | | | | | | | |
| | San Juan Creek (Mouth) | L | X | | | | | | | |
| | Segunda Deshecha Creek | M | | | X | | | | | X |

** Final Adoption by EPA pending*

## 7.II - 3.2.4 Identify Hydrologic Conditions of Concern

Common impacts to the hydrologic regime resulting from development typically include increased runoff volume and velocity; reduced infiltration; increased flow frequency, duration, and peaks; faster time to reach peak flow; and water quality degradation. Under certain circumstances, changes could also result in the reduction in the amount of available sediment for transport; storm flows could fill this sediment-carrying capacity by eroding the downstream channel. These changes have the potential to permanently impact downstream channels and habitat integrity.

A change to a priority project site's hydrologic regime would be considered a condition of concern if the change would have a significant impact on downstream natural channels and habitat integrity. Because of these potential impacts, the following steps shall be followed by each priority project:

1. Determine if the downstream stream channel is fully natural or partially improved with a significant potential for erosive conditions or alteration of habitat integrity to occur as a result of upstream development. If either of these conditions exists, continue with the following steps.

2. Evaluate the project's conditions of concern in a drainage study report prepared by a registered civil engineer in the State of California, with experience in fluvial geomorphology and water resources management. The report shall consider the project area's location (from the larger watershed perspective), topography, soil and vegetation conditions, percent impervious area, natural and infrastructure drainage features, and any other relevant hydrologic and environmental factors to be protected specific to the project area's watershed.

3. Review watershed plans, drainage area master plans or other planning documents to the extent available to identify if any specific implementation requirements for new development exist that address hydrologic conditions of conern.

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4. As part of the drainage study, the civil engineer shall conduct a field reconnaissance to observe and report on representative downstream conditions, including undercutting erosion, slope stability, vegetative stress (due to flooding, erosion, water quality degradation, or loss of water supplies) and the area's susceptibility to erosion or habitat alteration as a result of an altered flow regime or change in sediment transport.

5. The drainage study shall compute rainfall runoff characteristics from the project area including, at a minimum, peak flow rate, flow velocity, runoff volume, time of concentration, and retention volume. These characteristics shall be developed for the two-year and 10-year frequency, Type I storm, of six-hour or 24-hour duration (whichever is the closer approximation of the site's time of concentration), during critical hydrologic conditions for soil and vegetative cover[2].

[2] Design storms can be found at http://www.wrcc.dri.edu/pcpnfreq.html. The Permittees may calculate the storm events using local rain data. In addition, isopluvial maps contained in the Orange County Hydrology Manual may be used to extrapolate rainfall data to

The drainage study shall report the project's conditions of concern based on the hydrologic and downstream conditions discussed above. Where downstream conditions of concern have been identified, the drainage study shall establish, with documentation deemed adequate by the permittee, that pre-project hydrologic conditions affecting downstream conditions of concern would be maintained by the proposed project, satisfactory to the Permittee, by incorporating the site design, source control, and treatment control requirements identified in **Section 3.3.4**. For conditions where a reduction in sediment transport from the project development and features would significantly impact downstream erosion, the Treatment Control BMPs proposed should be evaluated to determine if use of the BMPs would result in reducing beneficial sediment (i.e. sand and gravel) significantly below pre-development levels. Under such conditions alternative BMPs (such as watershed based approaches for erosional sediment control) may need to be considered.

### 7.II - 3.3 BMP Selection

All Priority Projects shall consider, incorporate and implement urban runoff and stormwater BMPs into the project design, in the following progression:

- Site Design BMPs
- Source Control BMPs (routine non-structural and routine structural)
- Treatment Control BMPs (or participation in a regional or watershed program)

At a minimum, Priority Projects must implement Source Control BMPs (routine non-structural and routine structural) and must implement Treatment Control BMPs (or participate in a regional or watershed program) unless a waiver is granted based on the infeasibility of all Treatment Control BMPs as discussed in Section 7.II – 6.0. BMPs must also achieve the performance standards set out in **Section 3.3.4**. Upon completion, for Public Agency projects will become subject to the Municipal Activities Program. Therefore it is not necessary to identify routine non-structural BMPs in the WQMP provided that such BMPs already been identified as part of the Municipal Activities Program (see **DAMP Section 5**).

A number of the Site Design and Treatment Control BMPs rely on infiltration of runoff to reduce the volume and load of pollutants to surface receiving waters. While such approaches can be very effective, there are potential limitations with respect to both soil stability and groundwater quality that are discussed in **Section 3.3.4** under *RESTRICTIONS ON USE OF INFILTRATION BMPs.*

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areas where insufficient data exists. If isopluvial maps are selected, Permittees shall describe their method for using isopluvial maps in their Local Implementation Plan.

## 7.II - 3.3.1 Site Design BMPs

Priority Projects shall be designed to minimize the introduction of pollutants that may result in significant impacts, generated from site runoff to the municipal storm drain system through a combination of BMPs that may include Site Design, Source Control, and Treatment Control BMPs. Priority Projects for which hydrologic conditions of concern have been identified shall also control post-development peak stormwater runoff discharge rates and velocities to maintain or reduce pre-development downstream erosion rates and to protect stream habitat. Priority Projects can address these objectives by considering the incorporation of Site Design BMPs that are intended to create a hydrologically functional project design that attempts to mimic the natural hydrologic regime. Mimicking a site's natural hydrologic regime can be pursued by:

- Reducing imperviousness, conserving natural resources and areas, maintaining and using natural drainage courses in the municipal storm drain system, and minimizing clearing and grading.

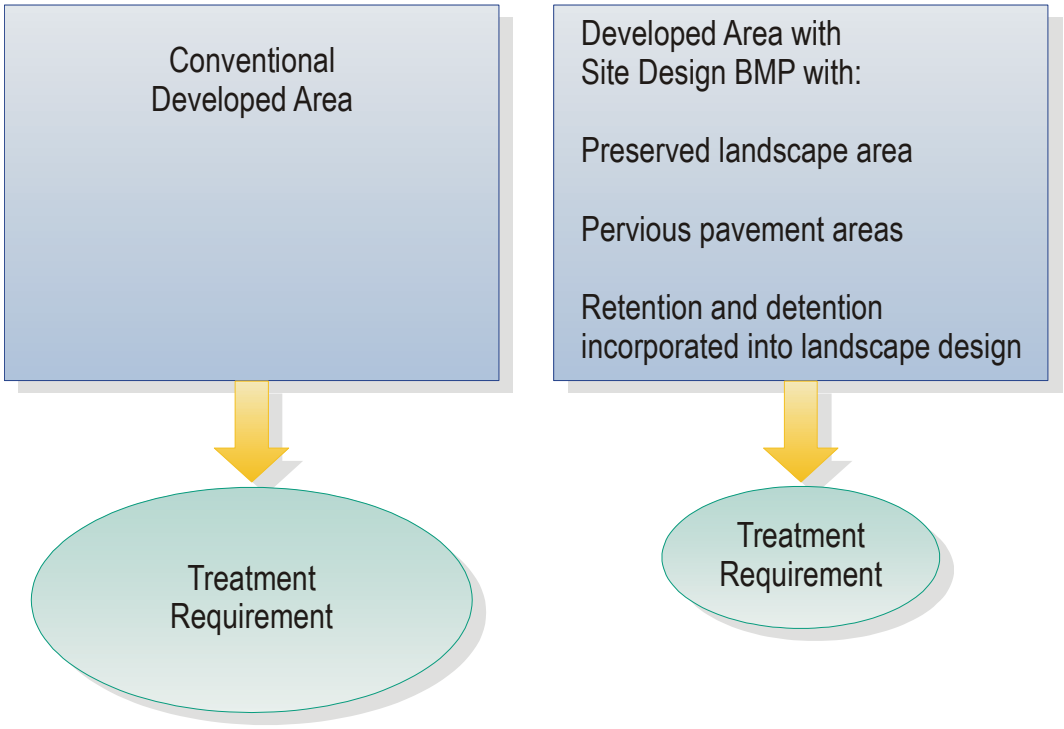
- Providing runoff storage measures dispersed uniformly throughout a site's landscape with the use of a variety of detention, retention, and runoff practices.

- Implementing on-lot hydrologically functional landscape design and management practices.

Runoff from developed areas may be reduced by using alternative materials or surfaces with a lower Coefficient of Runoff, or "C Factor". The C Factor is a representation of the ability of a surface to produce runoff. Surfaces that produce higher volumes runoff are represented by higher C Factors. By incorporating more pervious, lower C Factor surfaces into a development, lower volumes of runoff will be produced. Lower volumes and rates of runoff translate directly to lowering treatment requirements.

Detention and retention areas incorporated into landscape design provide areas for retaining and detaining stormwater flows, resulting in lower runoff rates and reductions in volume due to limited infiltration and evaporation. Such Site Design BMPs may reduce the size of Treatment Control BMPs,

***Figure 7.II-2***
***Reduction of Treatment by Incorporation of Site Design BMPs***




These design principles offer an innovative approach to urban stormwater management, one that does not rely on the conventional end-of-pipe or in-the-pipe structural methods but instead uniformly or strategically integrates stormwater controls throughout the urban landscape. Useful resources for applying these principles, referenced in **Section 8.0 and Attachment B**, include Start at the Source (1999), and Low-Impact Development Design Strategies (1999).

***DESIGN CONCEPT 1: MINIMIZE STORMWATER RUNOFF, MINIMIZE PROJECT'S IMPERVIOUS FOOTPRINT AND CONSERVE NATURAL AREAS***

Minimize and/or control the post-development peak stormwater runoff discharge rates, velocities and volumes by utilizing measures that reduce runoff rates and volumes, and increase infiltration. A reduction in the stormwater runoff from a development project using properly designed BMPs, can yield a corresponding reduction in the amount of pollutants transported from the site. The undeveloped runoff volume should be determined by considering the project site to be in a natural condition with surface vegetation in place.

The following site design options shall be considered and incorporated where applicable and feasible, during the site planning and approval process consistent with applicable General Plan policies, other development standards and regulations and with any Site Design BMPs included in an applicable regional or watershed program.

1. Minimize impervious footprint. This can be achieved in various ways, including, but not limited to increasing building density (number of stories above or below ground) and developing land use regulations seeking to limit impervious surfaces. Decreasing the project's footprint can substantially reduce the project's impacts to water quality and hydrologic conditions

2. Conserve natural areas. This can be achieved by concentrating or clustering development on the least environmentally sensitive portions of a site while leaving the remaining land in a natural, undisturbed condition. Where available, permittees should also refer to their Multiple Species Conservation Plans or other biological regulations, as appropriate to assist in determining sensitive portions of the site.

   Within each of the previous categories, areas containing hillsides (as defined in this Model WQMP) should be considered more sensitive than the same category without hillsides.

3. Construct walkways, trails, patios, overflow parking lots, alleys, driveways, low-traffic streets and other low-traffic areas with open-jointed paving materials or permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials

4. Construct streets, sidewalks and parking lot aisles to the minimum widths necessary, provided that public safety and a walk able environment for pedestrians are not compromised [3]. Incorporate landscaped buffer areas between sidewalks and streets
5. Reduce widths of street where off-street parking is available [4]

6. Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs

7. Minimize the use of impervious surfaces, such as decorative concrete, in the landscape design

8. Use natural drainage systems if feasible.

9. Where soils conditions are suitable, use perforated pipe or gravel filtration pits for low flow infiltration [5]

10. Construct onsite ponding areas or retention facilities to increase opportunities for infiltration

11. Other site design options that are comparable, and equally effective

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3 Sidewalk widths must still comply with Americans with Disabilities Act regulations and other life safety requirements.

4 However, street widths must still comply with life safety requirements for fire and emergency vehicle access.

5 However, projects must still comply with hillside grading ordinances that limit or restrict infiltration of runoff.

*DESIGN CONCEPT 2: MINIMIZE DIRECTLY CONNECTED IMPERVIOUS AREAS (DCIAs)*

Priority Projects shall consider and incorporate the following design characteristics, where determined applicable and feasible and with any Site Design BMPs included in an applicable regional or watershed program.

1. Where landscaping is proposed, drain rooftops into adjacent landscaping prior to discharging to the storm drain

2. Where landscaping is proposed, drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping

3. Increase the use of vegetated drainage swales in lieu of underground piping or imperviously lined swales

4. Use one or more of the following (for further guidance, see Start at the Source [1999]):

    a. Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings

    b. Urban curb/swale system: street slopes to curb; periodic swale inlets drain to vegetated swale/biofilter

    c. Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to municipal storm drain systems

    d. Other design concepts that are comparable and equally effective

5. Use one or more of the following features for design of driveways and private residential parking areas:

    a. Design driveways with shared access, flared (single lane at street) or wheel strips (paving only under tires); or, drain into landscaping prior to discharging to the municipal storm drain system

    b. Uncovered temporary or guest parking on private residential lots may be: paved with a permeable surface; or, designed to drain into landscaping prior to discharging to the municipal storm drain system

    c. Other design concepts that are comparable and equally effective

6. Use one or more of the following design concepts for the design of parking areas:

    a. Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design

b. Overflow parking (parking stalls provided in excess of the Permittee's minimum parking requirements) may be constructed with permeable paving

c. Other design concepts that are comparable and equally effective

7. Other design characteristics that are comparable and equally effective

## 7.II - 3.3.2 Source Control BMPs

The following Source Control BMPs (routine non-structural BMPs, routine structural BMPs and BMPs for individual categories/project features) are required within all new development and significant redevelopment projects regardless of their priority, including an applicable regional or watershed program, unless they do not apply due to the project characteristics. If any of the following Source Control BMP that would otherwise apply to the project is not included in the project, an explanation of why must be included in the Project WQMP or the regional or watershed program.

***INCLUDE ROUTINE NON-STRUCTURAL SOURCE CONTROL BMPs:***

- *N1 Education for Property Owners, Tenants and Occupants*

  For developments with no Property Owners Association (POA) or with POAs of less than fifty (50) dwelling units, practical information materials will be provided to the first residents/occupants/tenants on general housekeeping practices that contribute to the protection of stormwater quality. These materials will be initially developed and provided to first residents/occupants/tenants by the developer. Thereafter such materials will be available through the Permittees' education program. Different materials for residential, office commercial, retail commercial, vehicle-related commercial and industrial uses will be involved.

  For developments with POA and residential projects of more than fifty (50) dwelling units, project conditions of approval will require that the POA provide environmental awareness education materials, made available by the municipalities, to all member periodically. Among other things, these materials will describe the use of chemicals (including household type) that should be limited to the property, with no discharge of wastes via hosing or other direct discharge to gutters, catch basins and storm drains.

- *N2 Activity Restrictions*

  If a POA is formed, conditions, covenants and restrictions (CCRs) shall be prepared by the developer for the purpose of surface water quality protection. An example would be not allowing car washing outside of established community car wash areas in multi-unit complexes. Alternatively, use restrictions may be developed by a building operator through lease terms, etc. These restrictions must be included in the Project WQMP.

- *N3 Common Area Landscape Management*

  On-going maintenance consistent with County Water Conservation Resolution or city equivalent, plus fertilizer and/or pesticide usage consistent with Management Guidelines for Use of Fertilizers (**DAMP Section 5.5**). Statements regarding the specific applicable guidelines must be included in the Project WQMP.

- *N4 BMP Maintenance*

  Identify responsibility for implementation of each non-structural BMP and scheduled cleaning and/or maintenance of all structural BMP facilities.

- *N5 Title 22 CCR Compliance*

  Compliance with Title 22 of the California Code of Regulations and relevant sections of the California Health & Safety Code regarding hazardous waste management shall be enforced by County Environmental Health on behalf of the State. The Project WQMP must describe how the development will comply with the applicable section(s) of Title 22.

- *N6 Local Water Quality Permit Compliance*

  The Permittees, under the Water Quality Ordinance, may issue permits to ensure clean stormwater discharges from fuel dispensing areas and other areas of concern to public properties.

- *N7 Spill Contingency Plan*

  Prepared by building operator for use by specified types of building or suite occupancies and which mandates stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials, documentation, etc.

- *N8 Underground Storage Tank Compliance*

  Compliance with State regulations dealing with underground storage tanks, enforced by County Environmental Health on behalf of State.

- *N9 Hazardous Materials Disclosure Compliance*

  Compliance with Permittee ordinances typically enforced by respective fire protection agency for the management of hazardous materials. The Orange County, health care agencies, and/or other appropriate agencies (i.e. Department of Toxics Substances Control or Agricultural Department) are typically responsible for enforcing hazardous waste handling and disposal regulations.

## N10 Uniform Fire Code Implementation

Compliance with Article 80 of the Uniform Fire Code enforced by fire protection agency.

- *N11 Common Area Litter Control*

For industrial/commercial developments and for developments with POAs, the owner/POA shall be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. The owner/POA may contract with their landscape maintenance firms to provide this service during regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations by tenants/homeowners or businesses and reporting the violations to the owner/POA for investigation.

- *N12 Employee Training*

Education program (see N1) as it would apply to future employees of individual businesses. Developer either prepares manual(s) for initial purchasers of business site or for development that is constructed for an unspecified use makes commitment on behalf of POA or future business owner to prepare.

- *N13 Housekeeping of Loading Docks*

Loading docks typically found at large retail and warehouse-type commercial and industrial facilities shall be kept in a clean and orderly condition through a regular program of sweeping and litter control and immediate cleanup of spills and broken containers. Cleanup procedures should minimize or eliminate the use of water. If washdown water is used, it must be at disposed of in an approved manner and not discharged to the storm drain system. If there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer may be considered only if allowed by the local sewering agency through a permitted connection.

- *N14 Common Area Catch Basin Inspection*

For industrial/commercial developments and for developments with privately maintained drainage systems, the owner is required to have at least 80 percent of drainage facilities inspected, cleaned and maintained on an annual basis with 100 percent of the facilities included in a two-year period [ cleaned] prior to the storm season, no later than October 15th each year. Drainage facilities include catch basins (storm drain inlets) detention basins, retention basins, sediment basins, open drainage channels and lift stations.

- *N15 Street Sweeping Private Streets and Parking Lots*

Streets and parking lots are required to be swept prior to the storm season, no later than October 15 each year.

- *N16 Commercial Vehicle Washing*

  *This BMP Has Been Removed.*

- *N17 Retail Gasoline Outlets*

  Retail gasoline outlets (RGOs) are required to follow operations and maintenance best management practices shown in the California Stormwater Quality Association (CASQA, formerly California Stormwater Quality Task Force) Best Management Practice Guide for Retail Gasoline Outlets. This document may be obtained by downloading from the CASQA website at http://www.stormwatertaskforce.org/swqtf/RGOGuide.htm or from forthcoming CASQA website.

## *INCLUDE ROUTINE STRUCTURAL SOURCE CONTROL BMPs*

*Provide Storm Drain System Stenciling and Signage*

Storm drain stencils are highly visible source control messages, typically placed directly adjacent to storm drain inlets. The stencils contain a brief statement that prohibits the dumping of improper materials into the municipal storm drain system. Graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the anti-dumping message. Stencils and signs alert the public to the destination of pollutants discharged into stormwater. The following requirements shall be included in the project design and shown on the project plans:

1. Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language (such as: "NO DUMPING-DRAINS TO OCEAN") and/or graphical icons to discourage illegal dumping.

2. Post signs and prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

3. Maintain legibility of stencils and signs.

*Design Outdoor Hazardous Material Storage Areas To Reduce Pollutant Introduction*

Improper storage of materials outdoors may increase the potential for toxic compounds, oil and grease, fuels, solvents, coolants, wastes, heavy metals, nutrients, suspended solids, and other pollutants to enter the municipal storm drain system. Where the plan of development includes outdoor areas for storage of hazardous materials that may contribute pollutants to the municipal storm drain system, the following stormwater BMPs are required:

1. Hazardous materials with the potential to contaminate urban runoff shall either be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the municipal storm drain system; or (2)

protected by secondary containment structures (not double wall containers) such as berms, dikes, or curbs.

2. The storage area shall be paved and sufficiently impervious to contain leaks and spills.

3. The storage area shall have a roof or awning to minimize direct precipitation and collection of stormwater within the secondary containment area.

4. Any stormwater retained within the containment structure must not be discharged to the street or storm drain system.

Location(s) of installations of where these preventative measures will be employed must be included on the map or plans identifying BMPs.

*Design Trash Storage Areas To Reduce Pollutant Introduction*

All trash container areas shall meet the following requirements (limited exclusion: detached residential homes):

1. Paved with an impervious surface, designed not to allow run-on from adjoining areas, designed to divert drainage from adjoining roofs and pavements diverted around the area, screened or walled to prevent off-site transport of trash; and

2. Provide attached lids on all trash containers that exclude rain, or roof or awning to minimize direct precipitation.

3. Connection of trash area drains to the municipal storm drain system is prohibited.

*Use Efficient Irrigation Systems and Landscape Design*

Projects shall design the timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the municipal storm drain system. (Limited exclusion: detached residential homes.) The following methods to reduce excessive irrigation runoff shall be considered, and incorporated on common areas of development and other areas where determined applicable and feasible by the Permittee:

1. Employing rain shutoff devices to prevent irrigation after precipitation.

2. Designing irrigation systems to each landscape area's specific water requirements.

3. Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.

4. Implementing landscape plan consistent with County Water Conservation Resolution or city equivalent, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

5. The timing and application methods of irrigation water shall be designed to minimize the runoff of excess irrigation water into the municipal storm drain system.

6. Employing other comparable, equally effective, methods to reduce irrigation water runoff.

7. Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider other design features, such as:

   - Use mulches (such as wood chips or shredded wood products) in planter areas without ground cover to minimize sediment in runoff.

   - Install appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant material where possible and/or as recommended by the landscape architect.

   - Leave a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible.

   - Choose plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth.

*Protect Slopes and Channels*

Project plans shall include Source Control BMPs to decrease the potential for erosion of slopes and/or channels, consistent with local codes and ordinances and with the approval of all agencies with jurisdiction, e.g., the U.S. Army Corps of Engineers, the Regional Boards and the California Department of Fish and Game. The following design principles shall be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

1. Convey runoff safely from the tops of slopes.

2. Avoid disturbing steep or unstable slopes.

3. Avoid disturbing natural channels.

4. Stabilize disturbed slopes as quickly as possible.

5. Vegetate slopes with native or drought tolerant vegetation.

6. Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.

7. Stabilize channel crossings as quickly as possible, and ensure that increases in runoff velocity and frequency caused by the project do not erode the channel.

8. Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.

9. Onsite conveyance channels should be lined, where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are large enough to erode grass or other vegetative linings, riprap, concrete soil cement or geo-grid stabilization may be substituted or used in combination with grass or other vegetation stabilization.

10. Other design principles that are comparable and equally effective.

**INCORPORATE REQUIREMENTS APPLICABLE TO INDIVIDUAL PROJECT FEATURES:**

All projects, regardless of priority, shall adhere to each of the individual project category requirements that apply to the project (e.g., a restaurant would be required to incorporate the requirements for Equipment Wash Areas into the project design). Where identified in **Table 7.II-4**, the following requirements shall be incorporated into applicable priority projects.

***Table 7.II-4***
***Source Control and Site Design Stormwater BMP Selection Matrix***

| Priority Project Category | Source Control BMPs (1) | Requirements Applicable to Individual Project Features (or Priority Project Categories) (2) | | | | | | | Site Design BMPs (3) |
|---|---|---|---|---|---|---|---|---|---|
| | | Loading Dock Areas | Maintenance Bays | Vehicle Wash Areas | Outdoor Processing Areas | Equipment Wash Areas | Fueling Areas | Hillside Landscaping | |
| **Detached Residential Development** | R | | | | | | | R | C |
| **Attached Residential Development** | R | | | R | | | | R | C |
| **Commercial/ Industrial Development >100,000 ft$^2$** | R | R | R | R | R | R | R | R | C |
| **Automotive Repair Shop** | R | R | R | R | | R | R | | C |
| **Restaurants** | R | R | | | | R | | R | C |
| **Hillside Development >5,000 ft$^2$ in SDRWQCB** | R | | | | | | | R | C |
| **Hillside Development >10,000 ft$^2$ in SARWQCB** | R | | | | | | | R | C |
| **Parking Lots** | R | | | | | | | R | C |
| **Streets, Highways & Freeways** | R | | | | | | | R | C |

R = Required; select BMPs as required from the applicable steps in Section 7.II-3.3.2 or equivalent.
C = Consider and select one or more applicable BMPs
(1) Required for all projects regardless of priority. Refer to Section 7.II-3.3.2.
(2) Priority project categories must apply specific stormwater BMP requirements, where applicable. Projects are subject to the requirements of all priority project categories that apply.
(3) Refer to Section 7.II-3.3.1.

*Loading Dock Areas*

Loading/unloading dock areas shall include the following:

1. Cover loading dock areas, or design drainage to preclude urban run-on and runoff.

2. Direct connections to the municipal storm drain system from below grade loading docks (truck wells) or similar structures are prohibited. Stromwater can be discharged through a permitted connection to the storm drain system with a Treatment Control BMP applicable to the use.

3 Other features which are comparable and equally effective, that prevent unpermitted discharges to the municipal storm drain system.

4. Housekeeping of loading docks shall be consistent with N13.

*Maintenance Bays*

Maintenance bays shall include the following:

1. Repair/maintenance bays shall be indoors; or, designed to preclude urban run-on and runoff.

2. Design a repair/maintenance bay drainage system to capture all wash water, leaks and spills. Provide impermeable berms, drop inlets, trench catch basins, or overflow containment structures around repair bays to prevent spilled materials and wash-down waters from entering the storm drain system. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the municipal storm drain system is prohibited. If there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer may be considered only allowed by the local sewering agency through permitted connection.

3. Other features which are comparable and equally effective, that prevent discharges to the municipal storm drain system without appropriate permits.

*Vehicle Wash Areas*

Projects that include areas for washing/steam cleaning of vehicles shall use the following:

1. Self-contained or covered with a roof or overhang.

2. Equipped with a wash racks constructed in accordance with the guidelines in **Attachment C**, and with the prior approval of the sewering agency (Note: Discharge monitoring may be required by the sewering agency).

3. Equipped with a clarifier or other pretreatment facility.

4. If there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer may be considered only allowed by the local sewering agency through permitted connection.

5. Other features which are comparable and equally effective that prevent unpermitted discharges, to the municipal storm drain system.

*Outdoor Processing Areas*

Outdoor process equipment operations, such as rock grinding or crushing, painting or coating, grinding or sanding, degreasing or parts cleaning, landfills, waste piles, and wastewater and solid waste handling, treatment, and disposal, and other operations determined to be a potential threat to water quality by the Permittee shall adhere to the following requirements.

1. Cover or enclose areas that would be the sources of pollutants; or, slope the area toward a sump that will provide infiltration or evaporation with no discharge; or, if there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer may be considered only allowed by the local sewering agency through permitted connection

2. Grade or berm area to prevent run-on from surrounding areas.

3. Installation of storm drains in areas of equipment repair is prohibited.

4. Other features which are comparable or equally effective, that prevent unpermitted discharges to the municipal storm drain system.

5. Where wet material processing occurs (e.g. Electroplating), secondary containment structures (not double wall containers) shall be provided to hold spills resulting from accidents, leaking tanks or equipment, or any other unplanned releases (Note: If these are plumbed to the sanitary sewer, the structures and plumbing shall be in accordance with **Section 7.II - 8, Attachment D,** and with the prior approval of the sewering agency). See also **Section 7.II - 3.4.2, N10**. Design of secondary containment structures shall be consistent with "Design of Outdoor Material Storage Areas To Reduce Pollutant Introduction".

Some of these land uses (e.g. landfills, waste piles, wastewater and solid waste handling, treatment and disposal) may be subject to other permits including Phase I Industrial Permits that may require additional BMPs.

*Equipment Wash Areas*

Outdoor equipment/accessory washing and steam cleaning activities shall use the following:

1. Be self-contained or covered with a roof or overhang.

2. Be equipped with a clarifier, grease trap or other pretreatment facility, as appropriate and discharge If there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer may be considered only allowed by the local sewering agency through permitted connection to a sanitary sewer, through an approved connection.

3. Other features which are comparable or equally effective that prevent unpermitted discharges to the municipal storm drain system.

*Fueling Areas*

Fuel dispensing areas shall contain the following:

1. At a minimum, the fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

2. The fuel dispensing area shall be paved with Portland cement concrete (or equivalent smooth impervious surface). The use of asphalt concrete shall be prohibited.

3. The fuel dispensing area shall have an appropriate slope (2% - 4%) to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of stormwater.

4. An overhanging roof structure or canopy shall be provided. The cover's minimum dimensions must be equal to or greater than the area of the fuel dispensing area in #1 above. The cover must not drain onto the fuel dispensing area and the downspouts must be routed to prevent drainage across the fueling area. The fueling area shall drain to the project's Treatment Control BMP(s) prior to discharging to the municipal storm drain system.

*Hillside Landscaping*

Hillside areas that are disturbed by project development shall be landscaped with deep-rooted, drought tolerant plant species selected for erosion control, satisfactory to the Permittee.

*Wash Water Controls For Food Preparation Areas*

Food establishments (per State Health & Safety Code 27520) shall have either contained areas, sinks, each with sanitary sewer connections for disposal of wash waters containing kitchen and food wastes. If located outside, the contained areas, sinks shall also be structurally covered to prevent entry of stormwater. Adequate signs shall be provided and appropriately placed stating the prohibition of discharging of washwater to the storm drain system.

*Community Car Wash Racks*

In complexes larger than 100 dwelling units where car washing is allowed, a designated car wash area that does not drain to a storm drain system shall be provided for common usage.

Wash waters from this area may be directed to the sanitary sewer (in accordance with **Attachment C,** and with the prior approval of the sewering agency); to an engineered infiltration system; or to an equally effective alternative. Pre-treatment may also be required. Signage shall be provided prohibiting discharges of washwater outside of the designated area.

## 7.II - 3.3.3 Selection of Regional or Project–Based Approach to Treatment Control BMPs

Regional and/or watershed management programs that address runoff from New Development/Significant Redevelopment are encouraged to be considered as alternatives to Project WQMPs within the Santa Ana Regional Board permit area. Under certain conditions within the San Diego Regional Board permit area, offsite controls can also be considered. It is anticipated that individual or groups of Permittees will approve regional or watershed programs that will be utilized within their respective jurisdictions. Regional or watershed programs are meant to provide comprehensive water quality solutions for the new development or significant projects they are meant to serve. To this end, all BMPs applicable to individual projects served by the approved regional or watershed program as well as details of applicable Site Design BMPs and offsite ( as well as any on-site) Treatment Control BMPs will be predetermined in the approved regional or watershed program

A project may be approved based upon reliance on a Regional or Watershed Program approach if the following criteria are met:

- The project incorporates all appropriate routine Source Control BMPs and any applicable Site Design BMPs.

- The regional program incorporates Treatment Control BMPs that are sized to treat at a minimum the volume or flow for the water quality design storm for the runoff from the project and other new development or significant redevelopment projects served by the regional or watershed BMP(s) as determined by the planning for the regional/watershed program. The water quality design storm runoff volume or flow obligation for project participation in the regional/watershed program may be reduced based on the incorporation of any Site Design BMPs that offset treatment requirements for pollutants of concern.

- An implementation plan is identified including funding, timing, ability to implement and responsible parties. The implementation plan can rely on an adopted Regional/Watershed Master Plan. If a project is in a watershed where a Regional/Watershed Program can be considered or has already been adopted, the Project WQMP will describe or reference the Regional/Watershed Program and describe how the project will participate in or contribute to the program. The implementation plan will also identify an appropriate level of either project-specific monitoring or coordination with regional monitoring programs.

- One or more Permittees may have conducted and adopted a master plan to determine where on-site and community-wide facilities are appropriate. Where it is determined by the Permittees that on-site facilities are necessary, each Permittee would either define the performance standards to be consistent with or more stringent than this Model WQMP. When regional /watershed treatment controls are determined to be most practical, the developer may need to construct these facilities (for larger development projects), or pay a share of these facilities' cost through an equitable fee-in-lieu-of method. It is therefore important to establish an overall performance standard to allow the developer to select the appropriate Treatment Control BMPs given site conditions, costs, and performance.

When deciding to implement a regional or watershed management program, specific performance criteria should be evaluated. These performance criteria are listed as follows:

- The degree of pollution control provided under typical operating conditions.
- Variability of efficiency from pollutant to pollutant
- Variability of efficiency with storm characteristics
- The effect of design variables on performance
- Stability of efficiency over time
- Effectiveness relative to other BMPs
- Reduction of toxicity
- Improvement in, or protection of, downstream biotic communities
- Potential downstream negative impacts

Several factors affect whether a regional/watershed or project-based (on-site) structural approach is more feasible. Among these are removal effectiveness, cost, maintenance and construction timing:

*Pollutant Removal Effectiveness*

A variety of pollutant removal methods have been utilized in BMP monitoring studies to evaluate efficiency. The following are six methods typically used by investigators:

- Efficiency ratio
- Summation of loads
- Regression of loads
- Mean concentration
- Efficiency of individual storm loads
- Reference watersheds and before/after studies

Equations and example calculations are provided in the ASCE/EPA Technical Memorandum titled "Development of Performance Measures", which can be found in **Attachment D** of this Exhibit.

*Cost*

As with the selection of all BMPs, cost effectiveness is an important criterion to consider. When evaluating regional/watershed programs, it must be determined who will be responsible for funding the construction and/or upkeep of the regional/watershed control measures.

It is often most cost effective to utilize an existing treatment control near the development site. For instance, many Treatment Control BMPs can be incorporated into regional flood control detention/retention facilities with modest design refinements, and limited increased land requirements and cost. However, this type of alternative should be reviewed by the Orange County Flood Control District to check that both flood control and pollution control objectives are met.

Other potential issues that may affect cost include filling, dredging, and streambed alteration conditions; in which case, the project should be reviewed by the Army Corps of Engineers, the Regional Board, and the Department of Fish and Game.

*Maintenance*

Proper maintenance is crucial for all BMPs. It is necessary to clearly state who will be responsible for the maintenance and upkeep of the regional/watershed Treatment Control BMPs, as the responsible party in a regional/watershed program is not as apparent as with an on-site treatment control.

*Construction Timing*

Participation in a regional or watershed program may be approved provided construction of the regional/watershed structural Treatment Control BMP is completed (or an equivalent temporary alternative is put in place) prior to the post-construction use of the regional/watershed BMP by the new development or significant redevelopment project being approved. The regional/watershed BMPs shall only be required to have capacity to treat the dependent developments or phases of development that are in use.

Interim stormwater BMPs that provide equivalent or greater treatment than is required by the Model WQMP may be implemented until each regional/watershed Treatment Control BMP is operational. If interim BMPs are selected, the BMPs shall remain in use until permanent BMPs are operational.

## 7.II - 3.3.4 Treatment Control BMPs

Minimizing a development's detrimental effects on water quality can be most effectively achieved using a combination of Site Design, Source Control and Treatment Control BMPs. Where projects have been designed to reduce, the introduction of anticipated pollutants of concern that may result in significant impacts to the receiving waters through the implementation of Site Design and Source Control stormwater BMPs, the development may still have the potential for pollutants of concern to enter the municipal storm drain system or receiving waters.

Where acceptable regional or watershed management programs are available within the downstream watershed to address the pollutants of concern from new development and significant redevelopment, a project may participate in a regional or watershed program provided the program meets the criteria discussed in **Section 7.II - 3.3.3**. Otherwise, Priority Projects shall be designed to remove pollutants of concern from the municipal storm drain system through the incorporation and implementation of Treatment Control BMPs.

In meeting the requirements in this section, Priority Projects shall implement a single or combination of stormwater treatment BMPs that will remove anticipated pollutants of concern, as identified by the procedure in **Section 7.II - 3.2**, in site runoff. Treatment Control BMPs must be implemented unless a waiver is granted to the project by the Permittee, based on the infeasibility of any Treatment Control BMP (see **Section 7.II – 6.0**).

***QUANTITY DESIGN STANDARD FOR TREATMENT CONTROL BMPs***

All Priority Projects shall design, construct and implement structural Treatment Control BMPs that meet the design standards of this section, unless specifically exempted by the limited exclusions listed at the end of this section or the project is participating in an acceptable regional or watershed management program. Structural Treatment Control BMPs required by this section shall be operational prior to the use of any dependent development, and shall be located and designed in accordance with the requirements here in this section.

Unlike flood control measures that are designed to handle peak flows, stormwater Treatment Control BMPs are designed to treat the more frequent, lower-flow storm events, or the first flush portions of runoff from larger storm events (typically referred to as the first-flush events). Small, frequent storm events represent most of the total average annual rainfall for the area. The flow and volume from such small events is targeted for treatment. There is marginal water quality benefit gained by sizing treatment facilities to handle flows or volumes greater than the ones generated by small events.

The primary control strategy for designing Treatment Control BMPs is to treat the Stormwater Quality Design Flow (SQDF) or the Stormwater Quality Design Volume (SQDV) of the stormwater runoff. **Table 7.II-5** lists BMPs along with the basis of design, SQDF or SQDV, to be used for designing the BMP. **Attachment A** to this Exhibit provides detailed guidance and tools for determining the SQDV and SQDF for a project.

**Table 7.II-5 Basis of Design for Treatment Control BMPs**

| Treatment Control BMP | Design Basis |
|---|---|
| Vegetated (Grass) Strips | SQDF |
| Vegetated (Grass) Swales | |
| Proprietary Control Measures | |
| Dry Detention Basin | SQDV |
| Wet Detention Basin | |
| Constructed Wetland | |
| Detention Basin/Sand Filter | |
| Porous Pavement Detention | |
| Porous Landscape Detention | |
| Infiltration Basin | |
| Infiltration Trench | |
| Media Filter | |
| Proprietary Control Measures | |

*Stormwater Quality Design Volume (SQDV)*

Volume-based BMPs shall be designed to mitigate (infiltrate, filter, or treat) either:

1. The volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the local historical rainfall record;

2. The volume of runoff produced by the 85th percentile 24-hour runoff event, determined as the maximized capture urban runoff volume for the area, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ ASCE Manual of Practice No. 87, (1998); or

3. The volume of annual runoff based on unit basin storage volume, to achieve 90 percent or more volume treatment by the method recommended in California Stormwater Best Management Practices Handbook – Industrial/ Commercial, (1993), or

4. The volume of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile 24-hour runoff event,[6]

OR

*Stormwater Quality Design Flow (SQDF)*

Flow-based BMPs shall be designed to mitigate (infiltrate, filter, or treat) either:

1. The maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour for each hour of a storm event; or

2. The maximum flow rate of runoff produced by the 85th percentile hourly rainfall intensity, as determined from the local historical rainfall record, multiplied by a factor of two; or

3. The maximum flow rate of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile hourly rainfall intensity multiplied by a factor of two.

*Limited Exclusions:*

1. Proposed restaurants, where the land area for development or redevelopment is less than 5,000 square feet, are excluded from the Treatment Control BMP and numerical sizing criteria requirements.

2. Where significant redevelopment results in an increase of less than 50 percent of the impervious surfaces of a previously existing development, and the existing development was not subject to Project WQMP requirements, the Treatment Control BMP and numeric sizing criteria discussed in this section apply only to the addition, and not to the entire development.

***SELECTION OF TREATMENT CONTROL BMPs***

1. To select a structural Treatment Control BMP, each Priority Project shall compare the list of pollutants for which the downstream receiving waters are impaired (if any), with the pollutants anticipated to be generated by the project (as identified in **Table 7.II-2**).

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[6] This volume is not a single volume to be applied to all of Orange County. The size of the 85th percentile storm event is different for various parts of the County. The Permittees may calculate the 85th percentile storm event for each of their jurisdictions using local rain data pertinent to their particular jurisdiction (the 0.8 inch standard is a rough average for the County and should only be used where appropriate rain data is not available). In addition, isopluvial maps may be used to extrapolate rainfall data to areas where insufficient data exists in order to determine the volume of the local 85th percentile storm event in such areas. Where the Permittees will use isopluvial maps to determine the 85th percentile storm event in areas lacking rain data, the Permittees shall describe their method for using isopluvial maps in their Local Implementation Plan prepared as Appendix A of the 2003 DAMP.

Any pollutants identified by **Table 7.II-2**, which are also causing a Clean Water Act section 303(d) impairment of receiving waters of the project, shall be considered primary pollutants of concern. Priority Projects shall select a single or combination of stormwater Treatment Control BMPs, which address the particular primary pollutant(s) of concern. The Treatment Control BMP Selection Matrix (**Table 7.II-6)** should be used as a guide to assist in the selection of BMPs. BMPs are indicated in **Table A.II-6** that are presumed to be adequate to address their specific pollutant(s) of concern, as these BMPs have been shown to have either medium or high effectiveness in removing these particular pollutants. The selected Treatment Control BMP(s) will address other pollutants in addition to the primary pollutant(s) as shown in **Table A.II-6**.

If during the CEQA process a more refined evaluation of the project identifies that impacts on receiving waters may not be significant and that the project will not cause further exceedance of water quality objectives related to the pollutant(s) for which the receiving water is impaired, the project shall not be required to use pollutants-specific treatment BMP(s) but may use any Treatment Control BMP or combination of stormwater Treatment Control BMPs that are designed to mitigate pollution.

2. Priority Projects that are not anticipated to generate a primary pollutant of concern, shall select a single or combination of stormwater Treatment Control BMPs from **Table 7.II-6**, that are designed to be effective in reducing pollutants of concern.

3. Alternative stormwater Treatment Control BMPs not identified in **Table 7.II-6** may be approved at the discretion of the Permittee, provided the alternative Treatment Control BMP is as effective in removal of pollutants of concern as other feasible BMPs listed in **Table 7.II-6**.

*LOCATE TREATMENT CONTROL BMPs NEAR POLLUTANT SOURCES*

Project-based (on-site) structural Treatment Control BMPs should be implemented close to pollutant sources to minimize costs and maximize pollutant removal prior to runoff entering receiving waters. Such Treatment Control BMPs may be located on- or off-site, used singly or in combination, or shared by multiple new developments, pursuant to the following requirements:

1. All structural Treatment Control BMPs shall be located so as to infiltrate, filter, and/or treat the required runoff volume or flow prior to its discharge to any receiving water.

2. Multiple post-construction structural Treatment Control BMPs for a single Priority Project shall collectively be designed to comply with the design standards of this section;

***Table 7-II-6***
***Treatment Control BMP Selection Matrix*** [1]

| Pollutant of Concern | Treatment Control BMP Categories | | | | | |
|---|---|---|---|---|---|---|
| | **Biofilters** | **Detention Basins** | **Infiltration Basins** [2] | **Wet Ponds or Wetlands** | **Filtration** | **Hydrodynamic Separator Systems** [3] |
| Sediment Turbidity | H/M | H/M | H/M | H/M | H/M | H/M |
| Nutrients | L | H/M | H/M | H/M | H/M | L |
| Organic Compounds | U | U | U | U | H/M | L |
| Trash & Debris | L | H/M | U | U | H/M | H/M |
| Oxygen Demanding Substances | L | H/M | H/M | H/M | H/M | L |
| Bacteria & Viruses | U | U | H/M | U | H/M | L |
| Oil & Grease | H/M | H/M | U | U | H/M | L/M |
| Pesticides (non-soil bound) | U | U | U | U | U | L |

(1) Cooperative periodic performance assessment may be necessary. This Treatment Control BMP table will be updated as needed and as knowledge of stormwater treatment BMPs improves.

(2) Including trenches and porous pavement.

(3) Also known as hydrodynamic devices and baffle boxes.

L: Low removal efficiency

H/M: High or medium removal efficiency

U: Unknown removal efficiency

Sources: Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (1993), National Stormwater Best Management Practices Database (2001), and Guide for BMP Selection in Urban Developed Areas (2001).

Biofilters include:

- Grass swales
- Grass strips
- Wetland vegetation swales
- Bioretention

Detention Basins include:

- Extended/dry detention basins with grass lining
- Extended/dry detention basins with impervious lining

Infiltration Basins include:

- Infiltration basins
- Infiltration trenches

Wet Ponds and Wetlands include:

- Wet ponds (permanent pool)
- Constructed wetlands

Filtration Systems include:

- Media filtration
- Sand filtration

Hydrodynamic Separation Systems include:

- Swirl Concentrators
- Cyclone Separators

3. Shared stormwater Treatment Control BMPs shall be operational prior to the use of any dependent development or phase of development. The shared BMPs shall only be required to treat the dependent developments or phases of development that are in use;

4. Interim stormwater Treatment Control BMPs that provide equivalent or greater treatment than is required by this section may be implemented by a dependent development until each shared BMP is operational. If interim BMPs are selected, the BMPs shall remain in use until permanent BMPs are operational.

For projects participating in a regional or watershed program in lieu of project-based BMPs, the BMPs must be located in accordance with the approved regional or watershed BMP program.

***RESTRICTIONS ON USE OF INFILTRATION BMPS***

Grading permits may limit or prohibit the use of infiltration BMPs in hillside or other special situations where slope stability and subsurface stability are of concern. Over time, infiltration may affect pre or post-development subsurface conditions, creating potential for instability.

It is also important to note that any drainage feature that infiltrates runoff poses some risk of potential groundwater contamination. Three factors significantly influence the potential for urban runoff to contaminate ground water. They are (i) pollutant mobility, (ii) pollutant abundance in urban runoff, (iii) and soluble fraction of pollutant. The risks associated with groundwater infiltration can be managed by:

- Designing landscape drainage features so that they promote infiltration of runoff, but do not inject runoff so that it bypasses the natural processes of filtering and transformation that occur in the soil. Taking reasonable steps to prevent the illegal discharge of wastes to drainage systems.

  In general, designs that disperse runoff over landscaped areas or through permeable surfaces are the most effective, easiest to maintain and have the lowest initial cost. These designs also minimize the risk of illegal disposal because the surface is visible and the infiltration rate per unit area is relatively low.

- For some sites, it may be feasible to use detention basins to infiltrate additional runoff in a more compact area, but the designer must consider the potential for illegal disposal of chemical spills. Detention basins should not drain to, or be located near, work areas where wash-water or liquid wastes are generated of where hazardous chemicals are stored. Detention basins should be clearly marked with "no dumping" signs and should be inspected regularly.

- The Orange County Groundwater Basin and the San Juan Groundwater Basin are the primary managed drinking water basins for the county residents and must be protected as a source of safe drinking water. The Orange County Water District (OCWD) and the San Juan Basin Authority (SJBA) are the agencies responsible for managing the Orange County Groundwater Basin and the San Juan Groundwater Basin. Planning and possible implementation of infiltration facilities must always be coordinated with OCWD and SJBA

to make sure that proposed solutions to stormwater quality do not cause groundwater quality problems.

- The risk of contamination of groundwater may be reduced by pretreatment of urban runoff. A discussion of limitations and guidance for infiltration practices is contained in Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration, Report *No. EPA/600/R-94/051, USEPA (1994).*

To protect groundwater quality, each Permittee shall apply restrictions to the use of any Treatment Control BMPs that are designed to primarily function as infiltration devices (such as infiltration trenches and infiltration basins). As additional ground water basin data is obtained, Permittees, in coordination with OCWD and SJBA, may develop additional restrictions on the use of any BMPs that allow incidental infiltration.

At a minimum, use of structural Treatment Control BMPs that are designed to primarily function as infiltration devices shall meet the following conditions[7]:

1. Use of structural infiltration treatment BMPs shall not cause or contribute to an exceedance of groundwater water quality objectives.

2. Pollution prevention and Source Control BMPs shall be implemented at a level appropriate to protect groundwater quality at sites where infiltration structural Treatment Control BMPs are to be used.

3. Structural infiltration Treatment Control BMPs shall not cause a nuisance or pollution, as defined in Water Code Section 13050.

4. Urban runoff from commercial developments shall undergo pretreatment to remove both physical and chemical contaminants, such as sedimentation or filtration, prior to infiltration.

5. All dry weather flows shall be diverted from infiltration devices except for those non-stormwater discharges authorized pursuant to 40 CFR 122.26(d)(2)(iv)(B)(1): diverted stream flows, rising ground waters, uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to municipal storm drain systems, uncontaminated pumped ground water, foundation drains, springs, water from crawl space pumps, footing drains, air conditioning condensation, flow from riparian habitats and wetlands, water line flushing, landscape irrigation, discharges from potable water sources other than water main breaks, irrigation water, individual residential car washing, and dechlorinated swimming pool discharges.

6. The vertical distance from the base of any infiltration structural Treatment Control BMP to the seasonal high groundwater mark shall be at least 10 feet or as determined on an individual, site-specific basis by the Permittee. Where groundwater does not support

[7] These conditions do not apply to structural Treatment Control BMPs which allow incidental infiltration and are not designed to primarily function as infiltration devices (such as grassy swales, detention basins, vegetated buffer strips, constructed wetlands, etc.)

beneficial uses, this vertical distance criterion may be reduced, provided groundwater quality is maintained. Reduction of vertical criterion should always be coordinated with OCWD and SJBA

7. The soil through which infiltration is to occur shall have physical and chemical characteristics (such as appropriate cation exchange capacity, organic content, clay content, and infiltration rate) that are adequate for proper infiltration durations and treatment of urban runoff for the protection of groundwater beneficial uses.

8. Infiltration structural Treatment Control BMPs shall not be used for areas of industrial or light industrial activity; areas subject to high vehicular traffic (25,000 or greater average daily traffic on main roadway or 15,000 or more average daily traffic on any intersecting roadway); automotive repair shops; car washes; fleet or RV storage areas (bus, truck, etc.); nurseries; and other high threat to water quality land uses and activities as designated by each Permittee in their Local Implementation Plan (see **Appendix A, 2003 DAMP**).

9. The horizontal distance between the base of any infiltration structural Treatment Control BMP and any water supply wells shall be 100 feet or as determined on an individual, site-specific basis by the Permittee.

10. Any entity that implements a structural infiltration Treatment Control BMP shall be required to mitigate any groundwater contamination caused by the infiltration system.

Where infiltration Treatment Control BMPs are authorized, their performance shall be evaluated for impacts on groundwater quality. In developing the local WQMPs, Permittees may develop additional restrictions on the use of Treatment Control BMPs that are designed to primarily function as infiltration devices. Permittees under the San Diego Regional Board shall consider Permit Section D.1.g. requirements to control the contribution of pollutants from one portion of the watershed to another portion of the watershed through interagency agreements among the Permittees. In those instances where a Permittee determined that implementation of proposed infiltration Treatment Control BMPs within their jurisdiction has a potential impact to groundwater quality in another jurisdiction, Permittees may include a notification requirement be placed upon those proposing such use in addition to the above protection measures.

## 7.II - 4.0 NON-PRIORITY PROJECTS

Non-Priority Projects for new development or significant redevelopment covered under this program shall perform the following steps for Project WQMP preparation using a process similar to described for Priority Projects:

- Incorporate all applicable Source Control BMPs (routine non-structural and routine structural, including requirements applicable to individual project features). See Section 7.II-3.3.2 for more details.

- Consider Site Design BMPs

  All non-priority new development and significant redevelopment projects shall consider, and incorporate and implement Site Design BMPs, where determined applicable and feasible during the site planning and approval process. See Section 7.II-3.3.1 for details.

## 7.II - 5.0 PROVIDE PROOF OF ONGOING STORMWATER BMP MAINTENANCE

The Permittees shall not accept stormwater structural BMPs as meeting the WQMP requirements standard, unless an O&M Plan is prepared (see **DAMP Section 7.6.6**) and a mechanism is in place that will ensure ongoing long-term maintenance of all structural and non-structural BMPs. This mechanism can be provided by the Permittee or by the project proponent. As part of project review, if a project proponent is required to include interim or permanent structural and non-structural BMPs in project plans, and if the Permittee does not provide a mechanism for BMP maintenance, the Permittee shall require that the applicant provide verification of maintenance requirements through such means as may be appropriate, at the discretion of the Permittee, including, but not limited to covenants, legal agreements, maintenance agreements, conditional use permits and/or funding arrangements.

### 7.II - 5.1 Maintenance Mechanisms

1. **Public entity maintenance**: The Permittee may approve a public or acceptable quasi-public entity (e.g., the County Flood Control District, or annex to an existing assessment district, an existing utility district, a state or federal resource agency, or a conservation conservancy) to assume responsibility for operation, maintenance, repair and replacement of the BMP. Unless otherwise acceptable to individual Permittees, public entity maintenance agreements shall ensure estimated costs are front-funded or reliably guaranteed, (e.g., through a trust fund, assessment district fees, bond, letter of credit or similar means). In addition, the Permittees may seek protection from liability by appropriate releases and indemnities.

   The Permittee shall have the authority to approve stormwater BMPs proposed for transfer to any other public entity within its jurisdiction before installation. The Permittee shall be involved in the negotiation of maintenance requirements with any other public entities accepting maintenance responsibilities within their respective jurisdictions; and in negotiations with the resource agencies responsible for issuing permits for the construction and/or maintenance of the facilities. The Permittee must be

identified as a third party beneficiary empowered to enforce any such maintenance agreement within their respective jurisdictions.

2. **Project proponent agreement to maintain stormwater BMPs**: The Permittee may enter into a contract with the project proponent obliging the project proponent to maintain, repair and replace the stormwater BMP as necessary into perpetuity. Security or a funding mechanism with a "no sunset" clause may be required.

3. **Assessment districts**: The Permittee may approve an Assessment District or other funding mechanism created by the project proponent to provide funds for stormwater BMP maintenance, repair and replacement on an ongoing basis. Any agreement with such a District shall be subject to the Public Entity Maintenance Provisions above.

4. **Lease provisions**: In those cases where the Permittee holds title to the land in question, and the land is being leased to another party for private or public use, the Permittee may assure stormwater BMP maintenance, repair and replacement through conditions in the lease.

5. **Conditional use permits**: For discretionary projects only, the Permittee may assure maintenance of stormwater BMPs through the inclusion of maintenance conditions in the conditional use permit. Security may be required.

6. **Alternative mechanisms**: The Permittee may accept alternative maintenance mechanisms if such mechanisms are as protective as those listed above.

### 7.II - 5.2 Permit Closeout Requirements

For discretionary projects, the Permittee-approved method of stormwater BMP maintenance shall be incorporated into the project's permit, and shall be consistent with permits issued by resource agencies, if any. Just as with all other aspects of a project's approved plans and designs, the Permittees will make a determination that all requirements of the Project WQMP have been satisfactorily completed prior to closeout of permits and issuance of certificates of use and occupancy (see **DAMP Section 7.6.6**).

For projects requiring only ministerial permits, the Permittee-approved method of stormwater BMP maintenance shall be shown on the project plans before the issuance of any ministerial permits. Verification will occur similar to discretionary projects.

In all instances, the project proponent shall provide proof of execution of a Permittee-approved method of maintenance, repair, and replacement (O&M Plan – See **Section 5.3**) before the issuance of construction approvals, permit closeout and issuance of certificates of use and occupancy. Permittees carrying out public projects that are not required to obtain permits shall be responsible for ensuring that a Permittee-approved method of stormwater BMP maintenance repair and replacement is executed prior to the completion of construction. For all properties, the verification mechanism will include the project proponent's signed statement, as part of the project application, accepting responsibility for all structural BMP maintenance, repair and replacement, until a Permittee-approved entity agrees to assume responsibility for structural

BMP maintenance, repair and replacement or an alternative mechanism is approved by the Permittee regarding maintenance, repair and replacement of the structural BMP.

### 7.II - 5.3 Maintenance Requirements

1. Operation & Maintenance (O&M) Plan: The Permittee shall ensure that a copy of an Operation & Maintenance (O&M) plan, prepared by the project proponent satisfactory to the Permittee, is received prior to permit closeout and the issuance of certificates of use and occupancy. The O&M Plan describes the designated responsible party to manage the stormwater BMP(s), employee's training program and duties, operating schedule, maintenance frequency, routine service schedule, specific maintenance activities, copies of resource agency permits, and any other necessary activities. At a minimum, maintenance agreements shall require the inspection and servicing of all structural BMPs on an annual basis.

   The project proponent or Permittee-approved maintenance entity shall complete and maintain O&M forms to document all maintenance requirements. Parties responsible for the O&M plan shall retain records for at least 5 years. These documents shall be made available to the Permittee for inspection upon request at any time.

2. Access Easement/Agreement: As part of the maintenance mechanism selected above, the Permittee shall require the inclusion of a copy of an executed access easement that shall be binding on the land throughout the life of the project, until such time that the stormwater BMP requiring access is replaced, satisfactory to the Permittee.

## 7.II - 6.0 WAIVER OF STRUCTURAL TREATMENT BMP REQUIREMENTS

Permittees may provide for a Priority Project to be waived from the requirement of implementing structural Treatment Control BMPs (see **Section 7.II - 3**) if infeasibility can be established. A Permittee shall only grant a waiver of infeasibility when all available structural treatment BMPs have been considered and rejected as infeasible. The burden of proof is on the project proponent to demonstrate that all available measures are infeasible. Permittees shall notify the Executive Officer of the appropriate Regional Board by Certified Mail (with Return Receipt) within five (5) days of each waiver issued and a copy of the waiver documentation shall include the name of the person granting each waiver and a copy of the Project WQMP.

Waivers may only be granted for structural Treatment Control BMP and structural Treatment Control BMP sizing requirements. Priority Projects, whether or not granted a waiver, may not cause or contribute to an exceedance of water quality objectives. Pollutants in runoff from projects granted a waiver must still be reduced through the use of Source Control and consideration of Site Design BMPs.

In considering a waiver the Permittees should review the CEQA documentation for the project to identify whether a significant unmitigatable impact was identified that was subject to a statement of overriding considerations.

Each Permittee that implements a waiver program may, at its option, also develop a WQMP waiver impact fee program to require project proponents who have received waivers to transfer the savings in cost, or a proportionate share thereof, as determined by the Permittee, to a stormwater mitigation fund. Each Permittee shall notify the Regional Board if a WQMP waiver impact fee program is developed pursuant to this Model WQMP. Further, details for any WQMP waiver impact fee program may be set out in the Local Implementation Plan (DAMP Appendix A), or in supplemental submissions if multiple Permittees establish a joint mitigation fund program for a region or watershed.

This Model WQMP does not preclude Permittees or groups of Permittees from imposing any other fees or charges on development projects that are permitted by law, or from managing or expending the monies received from such non-WQMP programs in any manner authorized by law.

## 7.II - 7.0 ALTERNATIVE APPROACHES FOR TREATMENT CONTROLS

### 7.II - 7.1 Site Design Stormwater Treatment Credits

Any Permittee may develop and submit for public review and Regional Board approval, a regional Model Site Design Stormwater Treatment Credits program that allows reductions in the volume or flow of stormwater that must be captured or treated on a project in return for the inclusion of specified project design features in the project. The Model Site Design Stormwater Treatment Credits program shall be deemed part of this Model WQMP following Regional Board approval.

Any such model program shall specify the conditions under which project proponents can be credited for the use of Site Design BMPs and low impact development techniques that can reduce the volume of stormwater runoff, preserve natural areas, and minimize the pollutant loads generated and potentially discharged from the site. Any Site Design Stormwater Treatment Credits program implemented by a Permittee within its jurisdiction shall be consistent and compliant with this model approved by the Regional Board.

## 7.II – 8.0 RESOURCES AND REFERENCES

A list of resources for information is provided in **Attachment B**.

**ATTACHMENT A**

**DESIGN OF TREATMENT CONTROL BMPs USING THE STORMWATER QUALITY DESIGN FLOW (SQDF) OR THE STORMWATER QUALITY DESIGN VOLUME (SQDV)**

Unlike flood control measures that are designed to handle peak flows, stormwater Treatment Control BMPs are designed to treat the more frequent, lower-flow storm events, or the first flush portions of runoff from larger storm events (typically referred to as the first-flush events). Small, frequent storm events represent most of the total average annual rainfall for the area. The flow and volume from such small events is targeted for treatment.

The primary control strategy for designing Treatment Control BMPs is to treat the Stormwater Quality Design Flow (SQDF) or the Stormwater Quality Design Volume (SQDV) of the stormwater runoff. This section explains how to calculate the SQDF or the SQDV of the stormwater runoff. In addition, Treatment Control BMPs must be designed to safely convey or bypass peak design storms.

**Hydrology/Hydraulics**

Hydrologic calculations for determining peak design storm flows in Orange County shall be in accordance with the latest edition of the Orange County Hydrology Manual produced in January 1986, together with the procedure set forth herein. Where jurisdictions within Orange County have approved alternative hydrologic calculation methods, the alternative methods may be utilized if they have been approved by the jurisdiction for use in design of flow-based stormwater quality BMPs.

The Orange County Hydrology Manual requires that storm drains with tributary areas of less than 640 acres be designed for a minimum of 10-year frequency below the top of the curb elevation using a combination of street and storm drain flow. In sump conditions, catch basin and connecting storm drains must be designed to a 25-year frequency. Habitable structures shall have 100-year flood protection.

**Stormwater Quality Design Flow (SQDF) Calculations**

The Stormwater Quality Design Flow (SQDF) is defined as the maximum flow rate of runoff produced from a rainfall intensity of 0.2-inch of rainfall per hour[8].

Calculation Procedure

1. The Stormwater Quality Design Flow in Orange County is defined as $Q_{P, SQDF}$.

2. Calculate the peak rate stormwater quality design flow for the site (or each sub-drainage area that will discharge to a separate BMP) produced by 0.2-inch/hour rainfall by using the rational method equation:

$$Q_{P, SQDF} = C * I * A$$

Where:

C = runoff coefficient obtained from **Table A-1**.

I = rainfall intensity (0.2 in/hr)

A = area of the site or sub-drainage area in acres

Note: An alternate but less conservative method of computing the peak rate stormwater quality design flow ($Q_{P, SQDF}$) is to use the formula given in section D.6 of the Orange County Hydrology Manual, for I less than or equal than the lowest infiltration rate Fp for soil group D. This formula is:

$$Q_{P, SQDF} = 0.90 * a_i * I * A$$

Where:

$a_i$ = ratio of impervious area to total area (decimal fraction)

[8] As defined in Section XII.B.3.B of the California Regional Water Quality Control Board, Santa Ana Region, Waste Discharge Requirements for the County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County within the Santa Ana Region, Urban Stormwater Runoff Management Program, Orange County, Order No. R8-2002-0010, NPDES Permit No. CAS618030; and in Section F.1.b.(2)(c) of the California Regional Water Quality Control Board, San Diego Region, Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of Orange, the Incorporated Cities of Orange County and the Orange County Flood Control District within the San Diego Region, Board Order No. R9-2002-0001, NPDES CAS0108740

***Table A-1***

***C Values Based on Impervious/Pervious Area Ratios***

| % Impervious | % Pervious | C |
|---|---|---|
| 0 | 100 | 0.15 |
| 5 | 95 | 0.19 |
| 10 | 90 | 0.23 |
| 15 | 85 | 0.26 |
| 20 | 80 | 0.30 |
| 25 | 75 | 0.34 |
| 30 | 70 | 0.38 |
| 35 | 65 | 0.41 |
| 40 | 60 | 0.45 |
| 45 | 55 | 0.49 |
| 50 | 50 | 0.53 |
| 55 | 45 | 0.56 |
| 60 | 40 | 0.60 |
| 65 | 35 | 0.64 |
| 70 | 30 | 0.68 |
| 75 | 25 | 0.71 |
| 80 | 20 | 0.75 |
| 85 | 15 | 0.79 |
| 90 | 10 | 0.83 |
| 95 | 5 | 0.86 |
| 100 | 0 | 0.90 |

***Example Stormwater Quality Design Flow (SQDF) Calculation***

The steps below show an example calculation for a 30-acre site with runoff coefficient of 0.45 (40% impervious).

*Step 1:*

Design Flow = $Q_{P, SQDF} = C * I * A$

*Step 2:*

Calculate the peak rate of flow

$Q_{P, SQDF} = 0.45 \times 0.2 \times 30 = 2.7$ cfs = Stormwater Quality Design Flow for the BMP.

**Stormwater Quality Design Storm Volume (SQDV) Calculations**

Hydrologic calculations for design of volumetric-based stormwater quality BMPs in Orange County shall be in accordance with one of the four following approaches specified in the permits:

i. The volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the local historical rainfall record (0.8 inch approximate average for the Orange County area)[9]; or

ii. The volume of runoff produced by the 85th percentile 24-hour runoff event, determined as the maximized capture urban runoff volume for the area, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual and Report on Engineering Practice No. 87, (1998); or

iii. The volume of annual runoff based on unit basin storage volume, to achieve 80 percent (Santa Ana Permit area), or 90 percent (San Diego Permit area) or more volume treatment by the method recommended in California Stormwater Best Management Practices Handbooks (1993), or

iv. The volume of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile 24-hour runoff event.[10]

Individual projects may evaluate and select any of the above approaches. Procedures, data specific to Orange County, and examples for applying approaches (i), (ii), and (iii) are presented herein.

The project used to demonstrate the calculations has the following characteristics:

- Located in the City of Irvine
- 400 ft above sea level
- Total project area, $A_t$, is 10 acres
- Impervious area, $A_i$, is 6 acres

---

[9] This volume is not a single volume to be applied to all of Orange County. The size of the 85th percentile storm event is different for various parts of the County. The Permittees are encouraged to calculate the 85th percentile storm event for each of their jurisdictions using local rain data pertinent to their particular jurisdiction (the 0.8 inch standard is a rough average for the County and should only be used where appropriate rain data is not available). In addition, isopluvial maps may be used to extrapolate rainfall data to areas where insufficient data exists in order to determine the volume of the local 85th percentile storm event in such areas. Where the Permittees will use isopluvial maps to determine the 85th percentile storm event in areas lacking rain data, the Permittees shall describe their method for using isopluvial maps in the model and local WQMPs.

[10] Under this volume criterion, hourly rainfall data may be used to calculate the 85th percentile storm event, where each storm event is identified by its separation from other storm events by at least six hours of no rain. If hourly rainfall data is selected, the Permittees shall describe the method for using hourly rainfall data to calculate the 85th percentile storm event in their local WQMPs.

Method (I):
The volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the local historical rainfall record (0.8 inch approximate average for the Orange County area below elevation of 1,000 feet and 0.95 in for projects above 1,000 feet elevation). The procedure is as follows:

1. ***Review the area draining to the proposed BMP***. Determine the percentage of the drainage area that is considered impervious. Impervious area includes paved areas, roofs, and other developed, non-vegetated areas. Non-vegetated, compacted soil areas shall be considered as impervious area.

2. ***Use Table A-1 to determine the Runoff Coefficient "C" for the drainage area***. The runoff coefficients from this table are intended only for use in this procedure for design of volumetric-based stormwater quality BMPs.

3. ***Find the depth of rainfall in inches of the 85th percentile storm event***.

   *Use 0.80 inch for projects with 1,000 ft or less in elevation.*

   *Use 0.95 inch for projects with 1,000 ft or more in elevation.*

4. ***Calculate the Water Quality Design Volume of the BMP***. The Water Quality Design Volume of the BMP is then calculated by multiplying the total rainfall by the BMP's drainage area and runoff coefficient. Due to the mixed units that result (e.g., acre-inches, acre-feet) it is recommended that the resulting volume be converted to cubic feet for use during design.

***Example Use of Unit Basin Storage Volume Curves Sizing a Dry Detention Basin***

(Ai/At) * 100 = (6/10) * 100 = 60%

From Table A-1, for 60% impervious, C = 0.60

$V_b = C * I * A_t$

$V_b = 0.60 * (0.8 \text{ in}) * (10 \text{ ac}) * (1 \text{ ft}/12 \text{ in}) * (43{,}560 \text{ ft}^2/\text{acre})$

**Size the BMP for $V_b$ = 17,424 $ft^3$ and 48-hr drawdown**

Note that this result is greater than that calculated using the 80% annual capture volume approach below (Method (iii)). This is in part because the capture volume method is based on a continuous simulation model using actual rainfall data and accounts for drawdown affects in the detention basin.

Method (II)

The volume of runoff produced by the 85th percentile 24-hour runoff event, determined as the maximized capture urban runoff volume for the area, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual and Report on Engineering Practice No. 87, (1998).

From WEF MOP 23/ASCE MREP 87:

$$P_0 = (a * C) * P_6$$

Where:

C = Runoff Coefficient = $0.858\ i^3 - 0.78\ i^2 + 0.774\ i + 0.04$

i = Watershed imperviousness ratio; namely, percent total imperviousness divided by 100 = 0.60

$P_6$ = mean storm precipitation volume, watershed inches. Using **Figure 5-3** in the manual, P6 = 0.65 inches

a = Regression constant from least-square analysis. Using **Table 5-4** in the manual for 48-hours drain time, a = 1.963

$P_0$ = Maximized detention volume using either the volume capture ratio as its basis, watershed inches

$C = 0.858\ (0.60)^3 - 0.78\ (0.60)^2 + 0.774\ (0.60) + 0.04 = 0.409$

$P_0 = (1.963 * 0.409) * 0.65$

$P_0 = 0.522$ inches

$V_b = 0.522$ (10 acre) (1 ft/12 in) (43,560 ft²/acre)

**Size the BMP for $V_b$ = 18,949 ft³ and 48-hour drawdown**

Note that this result is greater than that calculated using the 80% annual capture volume approach below (Method (iii)). This is in part because the capture volume method is based on a continuous simulation model using actual rainfall data and accounts for drawdown affects in the detention basin.

Method (III) – Annual Runoff or Unit Basin Storage Volume Method

1. ***Review the area draining to the proposed BMP***. Determine the percentage of the drainage area that is considered impervious. Impervious area includes paved areas, roofs, and other developed, non-vegetated areas. Non-vegetated, compacted soil areas shall be considered as impervious area.

2. ***Use Table A-1 to determine the Runoff Coefficient "C" for the drainage area.*** The runoff coefficients from this table are intended only for use in this procedure for design of volumetric-based stormwater quality BMPs. Alternately, obtain the Runoff Coefficient from the drainage design calculations for the project.

3. ***Find the Unit Basin Storage Volume*** [11].

   *Use **Figure A-1** for projects with elevations less than 1,000 ft.*

   *Use **Figure A-2** for projects with 1,000 ft or more in elevation.*

   Enter **Figure A-1** or **A-2** on the vertical axis at 80% Annual Capture for projects in the Santa Ana Regional Board region or 90% Annual Capture for projects in the San Diego Regional Board region.

   Move horizontally to the right across the figure until the curve corresponding to the drainage area's runoff coefficient ("C") determined in Step 2 is intercepted. Interpolation between curves may be necessary. Move vertically down the figure for this point until the horizontal axis is intercepted. Read the Unit Basin Storage Volume along the horizontal axis. Recommended drawdown time for dry detention basins is 48 hours as discussed in the fact sheet.

   OR

   ***Figure A-3** provides a direct reading of Unit Basin Storage Volumes required for 80% (Santa Ana Regional Board region) and 90% (San Diego Regional Board region) annual capture of runoff for values of "C" determined in Step 2 for projects with elevations less than 1000 ft.*

   ***Figure A-4** provides a direct reading of Unit Basin Storage Volumes required for 80% (Santa Ana Regional Board region) and 90% (San Diego Regional Board region) annual capture of runoff for values of "C" determined in Step 2 for projects with elevations 1000 ft or higher.*

[11] Figures A-1 – A-4 are based on Precipitation Gages 4650 and 8243, located at Laguna Beach and Silverado Ranger Station, respectively. Both of these gages have data records of approximately fifty years of hourly readings and are maintained by the National Weather Service. Figures A-1 through A-4 are for use only in the permit areas specified in Santa Ana Regional Board Order No. R8-2002-0010, NPDES Permit No. CAS618030; and San Diego Regional Board Order No. R9-2002-0001, NPDES CAS0108740.

Enter the vertical axis of **Figure A-3** (or **Figure A–4**) with the "C" value from Step 2. Move horizontally across the figure until the line is intercepted. Move vertically down the figure from this point until the horizontal axis is intercepted. Read the Unit Basin Storage Volume along the horizontal axis.

4. ***Calculate the BMP volume***. The basin volume or basic volume of the BMP is then calculated by multiplying the Unit Basin Storage Volume by the BMP's drainage area. Due to the mixed units that result (e.g., acre-inches, acre-feet) it is recommended that the resulting volume be converted to cubic feet for use during design.

***Example Use of Unit Basin Storage Volume Curves Sizing a Dry Detention Basin***

(Ai/At) * 100 = (6/10) * 100 = 60%

From **Table A-1**, for 60% impervious, C = 0.60

Use **Figure A-3**, and the line that provides a direct reading of Unit Basin Storage Volumes required for 80% (Santa Ana Regional Board region) annual capture of runoff for values of "C" determined from **Table A-1**, and for projects with elevations less than 1000 ft.

Enter the vertical axis of **Figure A-3** with C = 0.60. Move horizontally across the figure until the line is intercepted. Move vertically down the figure from this point until the horizontal axis is intercepted. Read the Unit Basin Storage Volume ($V_u$) along the horizontal axis.

$V_u$ = 0.46 inches

The volume of the basin is then $V_u \times A_t$

$V_b = V_u \times A_t$ = (0.46 in) (10ac) (1 ft/12 in) (43,560 $ft^2$/ac)

**Size the BMP for $V_b$ = 16,698 $ft^3$ and 48-hour drawdown**

*Figure A-1*
*Volumetric BMP Sizing Curves for*
*Orange County Stormwater Quality Management Program*
*Use for Elevations <1,000 Feet*

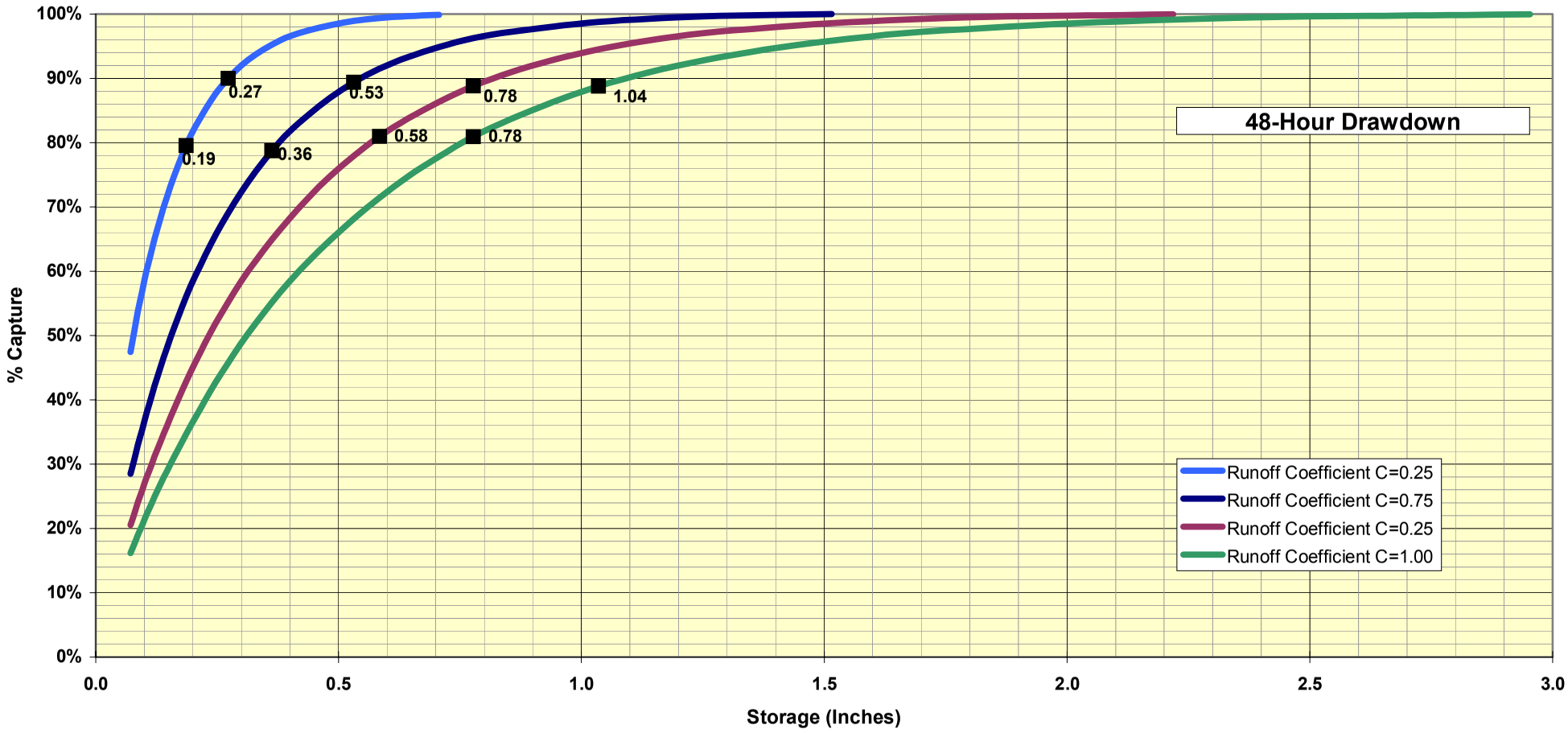


***Figure A-2***
***Volumetric BMP Sizing Curves for***
***Orange County Stormwater Quality Management Program***
***Use for Elevations >1,000 Feet***

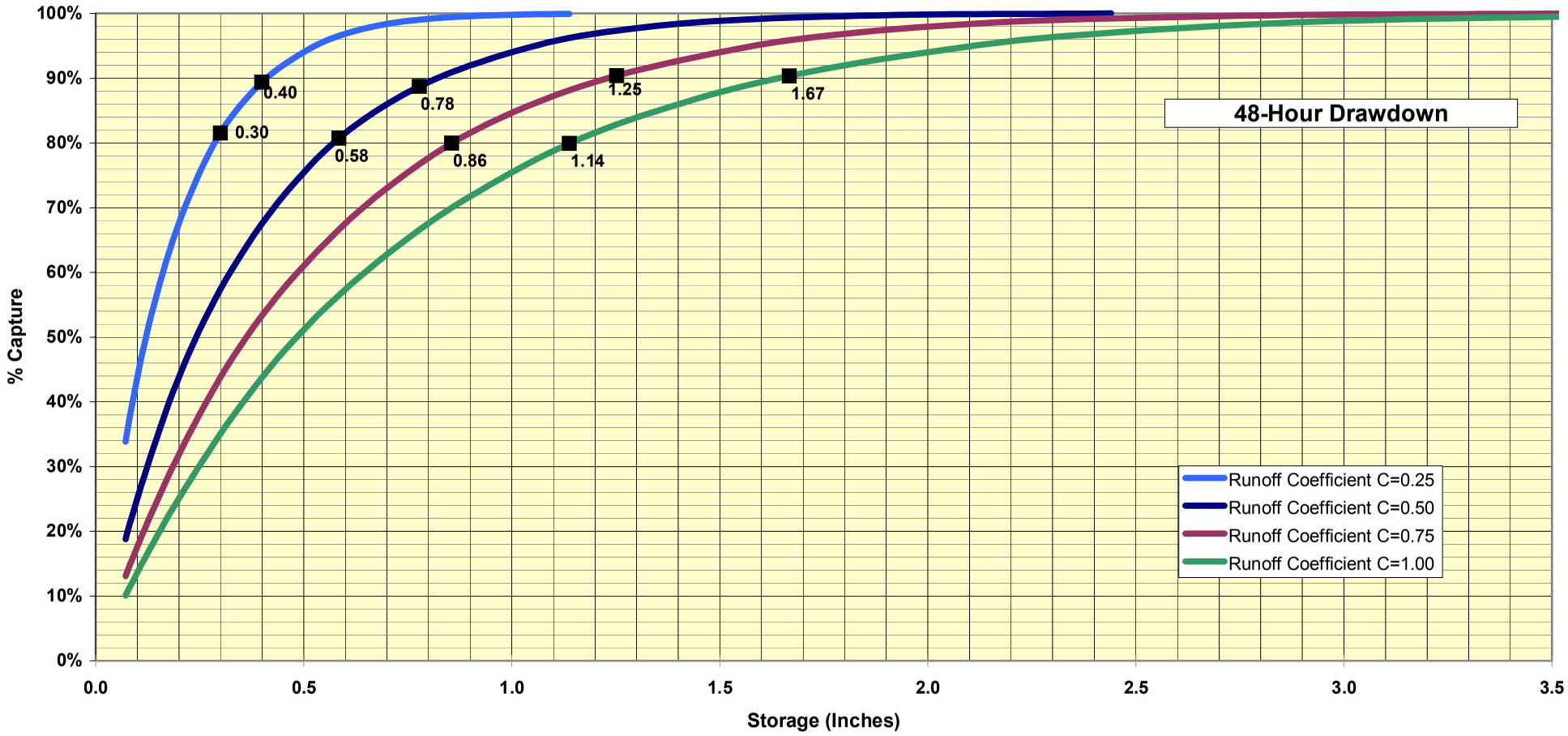


*Figure A-3*
*Volumetric BMP Sizing Curves for*
*Orange County Stormwater Quality Management Program*
*Use for Elevations < 1,000 Feet*

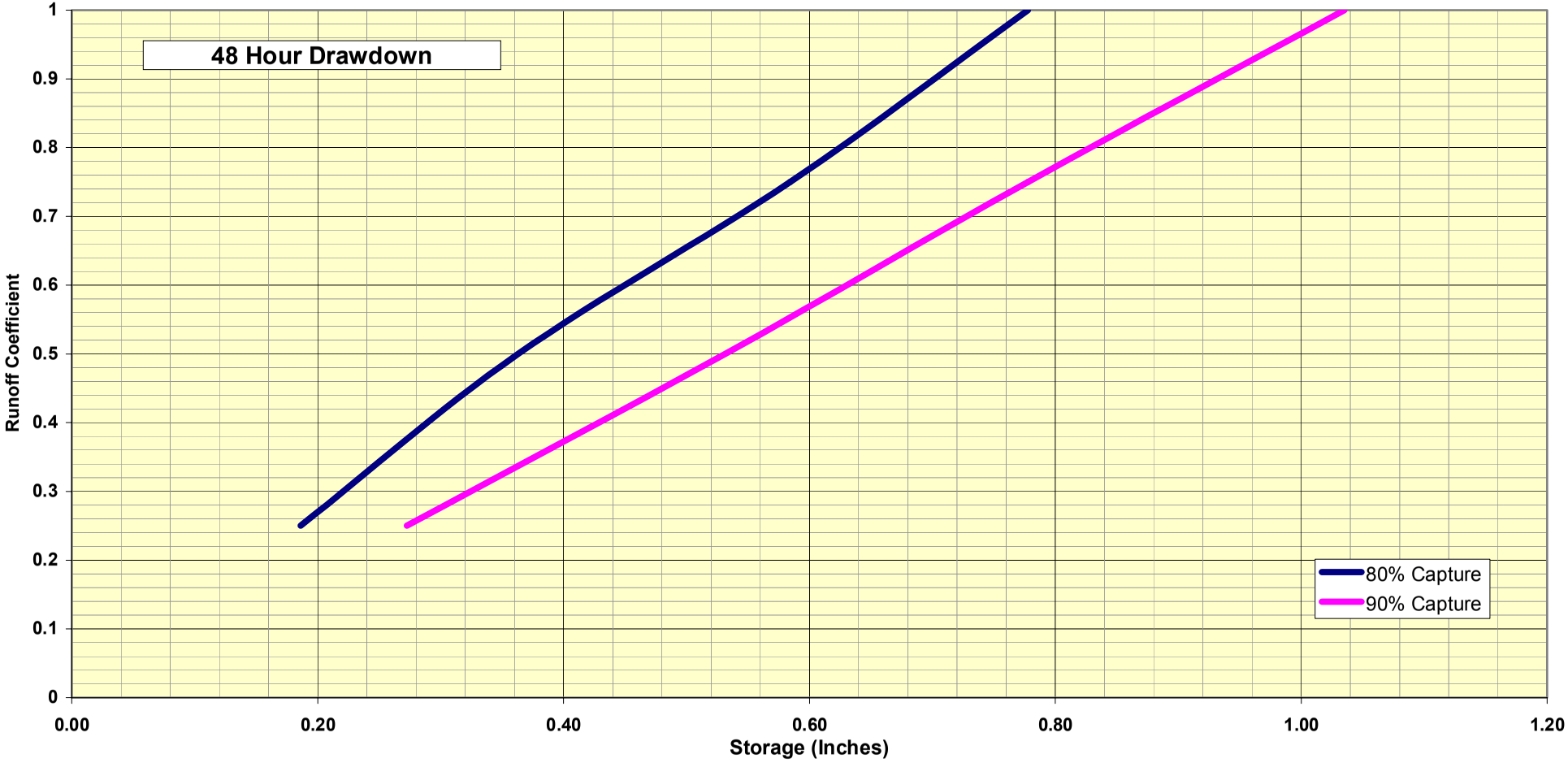
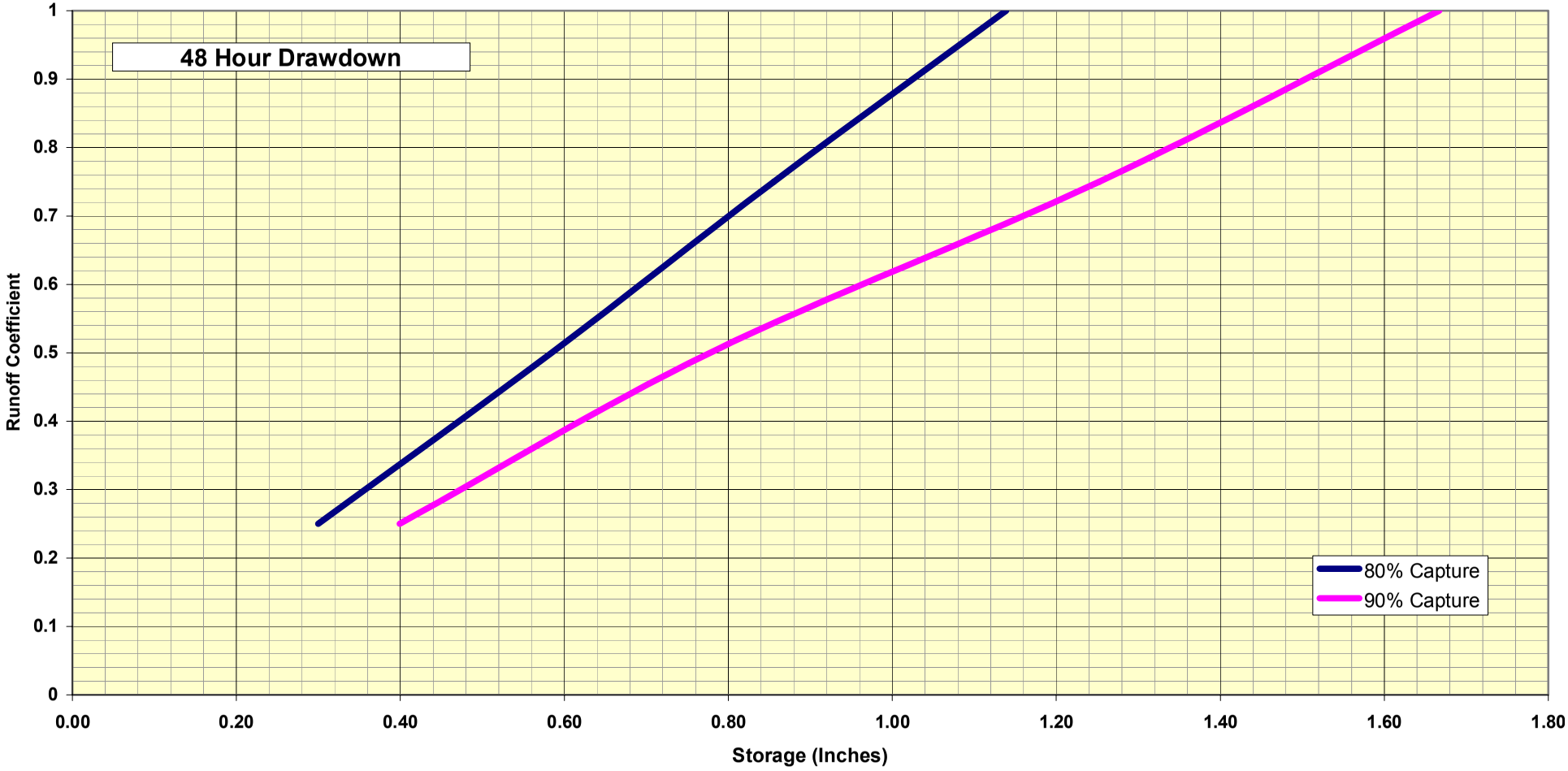


*Figure A-4*
*Volumetric BMP Sizing Curves for*
*Orange County Stormwater Quality Management Program*
*Use for Elevations >1,000 Feet*



## ATTACHMENT B – Suggested Resources

| SUGGESTED RESOURCES | HOW TO GET A COPY |
|---|---|
| Better Site Design: A Handbook for Changing Development Rules in Your Community (1998)<br><br>Presents guidance for different model development alternatives. | Center for Watershed Protection<br>8391 Main Street<br>Ellicott City, MD 21043<br>410-461-8323<br>www.cwp.org |
| California Urban runoff Best Management Practices Handbooks (1993) for Construction Activity, Municipal, and Industrial/Commercial<br><br>Presents a description of a large variety of Structural BMPs, Treatment Control, BMPs and Source Control BMPs | Los Angeles County Department of Public Works<br>Cashiers Office<br>900 S. Fremont Avenue<br>Alhambra, CA 91803<br>626-458-6959 |
| Caltrans Urban runoff Quality Handbook: Planning and Design Staff Guide (Best Management Practices Handbooks (1998)<br><br>Presents guidance for design of urban runoff BMPs | California Department of Transportation<br>P.O. Box 942874<br>Sacramento, CA 94274-0001<br>916-653-2975 |
| Design and Construction of Urban Stormwater Management Systems, American Society of Civil Engineers (ASCE) Manuals and Reports on Engineering Practice No. 77/ Water Environment Federation (WEF) Manual of Practice FD-20, 1992. | |
| Design Manual for Use of Bioretention in Stormwater Management (1993)<br><br>Presents guidance for designing bioretention facilities. | Prince George's County<br>Watershed Protection Branch<br>9400 Peppercorn Place, Suite 600<br>Landover, MD 20785 |
| Design of Stormwater Filtering Systems (1996) by Richard A. Claytor and Thomas R. Schuler<br><br>Presents detailed engineering guidance on ten different urban runoff-filtering systems. | Center for Watershed Protection<br>8391 Main Street<br>Ellicott City, MD 21043<br>410-461-8323 |
| Development Planning for Stormwater Management, A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), (May 2000) | Los Angeles County<br>Department of Public Works<br>http://dpw.co.la.ca.us/epd/ or<br>http://www.888cleanLA.com |
| Florida Development Manual: A Guide to Sound Land and Water Management (1988)<br><br>Presents detailed guidance for designing BMPs | Florida Department of the Environment 2600 Blairstone Road, Mail Station 3570<br>Tallahassee, FL 32399<br>850-921-9472 |

| SUGGESTED RESOURCES | HOW TO GET A COPY |
|---|---|
| Guidance Manual for On-Site Stormwater Quality Control Measures, Sacramento Stormwater Management Program. | City of Sacramento Department of Utilities and County of Sacramento Water Resources Division. January 2000. |
| Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (1993) Report No. EPA–840-B-92-002.<br><br>Provides an overview of, planning and design considerations, programmatic and regulatory aspects, maintenance considerations, and costs. | National Technical Information Service U.S. Department of Commerce<br>Springfield, VA 22161<br>800-553-6847 |
| Guide for BMP Selection in Urban Developed Areas (2001) | ASCE Envir. and Water Res. Inst.<br>1801 Alexander Bell Dr.<br>Reston, VA 20191-4400<br>(800) 548-2723 |
| Low-Impact Development Design Strategies -<br>An Integrated Design Approach (June 1999) | Prince George's County, Maryland<br>Department of Environmental Resource<br>Programs and Planning Division<br>9400 Peppercorn Place<br>Largo, Maryland 20774<br>http://www.co.pg.md.us/Government/DER/PPD/pgcounty/lidmain.htm |
| Maryland Stormwater Design Manual (1999)<br><br>Presents guidance for designing urban runoff BMPs | Maryland Department of the Environment<br>2500 Broening Highway<br>Baltimore, MD 21224<br>410-631-3000 |
| Methodology for Analysis of Detention Basins for Control of Urban Runoff Quality, Environmental Protection Agency (EPA-440/5-87-001). | |
| National Stormwater Best Management Practices (BMP) Database, Version 1.0<br><br>Provides data on performance and evaluation of urban runoff BMPs | American Society of Civil Engineers<br>1801 Alexander Bell Drive<br>Reston, VA 20191<br>703-296-6000 |
| National Stormwater Best Management Practices Database (2001) | Urban Water Resources Research Council of ASCE<br>Wright Water Engineers, Inc.<br>(303) 480-1700 |
| Operation, Maintenance and Management of Stormwater Management (1997)<br><br>Provides a thorough look at stormwater practices including, planning and design considerations, programmatic and regulatory aspects, maintenance considerations, and costs. | Watershed Management Institute, Inc.<br>410 White Oak Drive<br>Crawfordville, FL 32327<br>850-926-5310 |
| Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration | Report No. EPA/600/R-94/051, USEPA (1994). |

| SUGGESTED RESOURCES | HOW TO GET A COPY |
|---|---|
| Preliminary Data Summary of Urban runoff Best Management Practices (August 1999)<br><br>EPA-821-R-99-012 | http://www.epa.gov/ost/stormwater/ |
| Reference Guide for Stormwater Best Management Practices (July 2000) | City of Los Angeles<br>Urban runoff Management Division<br>650 South Spring Street, 7th Floor<br>Los Angeles, California 90014<br>http://www.lacity.org/san/swmd/ |
| Second Nature: Adapting LA's Landscape for Sustainable Living (1999) by Tree People<br><br>Detailed discussion of BMP designs presented to conserve water, improve water quality, and achieve flood protection. | Tree People<br>12601 Mullholland Drive<br>Beverly Hills, CA 90210<br>(818) 623-4848<br>Fax (818) 753-4625 |
| Site Planning for Urban Stream Protection, Department of Environmental Programs, Metropolitan Washington Council of Governments | |
| Start at the Source (1999)<br><br>Detailed discussion of permeable pavements and alternative driveway designs presented. | Bay Area Stormwater Management Agencies Association<br>2101 Webster Street<br>Suite 500<br>Oakland, CA<br>510-286-1255 |
| Stormwater, Grading and Drainage Control Code, Seattle Municipal Code Section 22.800-22.808, and Director's Rules, Volumes 1-4. (Ordinance 119965, effective July 5, 2000) | City of Seattle<br>Department of Design, Construction & Land Use<br>700 5th Avenue, Suite 1900<br>Seattle, WA 98104-5070<br>(206) 684-8880<br>http://www.ci.seattle.wa.us/dclu/Codes/sgdccode.htm |
| Stormwater Management in Washington State (1999) Vols. 1-5<br><br>Presents detailed guidance on BMP design for new development and construction. | Department of Printing<br>State of Washington Department of Ecology<br>P.O. Box 798<br>Olympia, WA 98507-0798<br>360-407-7529 |
| The Stormwater Manager's Resource Center. This is a comprehensive site with information on BMP design and sizing.<br>http://www.stormwatercenter.com | |
| Stormwater Pollution Control, Municipal, Industrial and Construction NPDES Compliance, Second Edition. Roy D. Dodson, P.E., 1999. | |
| Texas Nonpoint Source Book – Online Module (1998)www.txnpsbook.org<br><br>Presents BMP design and guidance information on-line | Texas Statewide Urban runoff Quality Task Force<br>North Central Texas Council of Governments<br>616 Six Flags Drive<br>Arlington, TX 76005<br>817-695-9150 |

| SUGGESTED RESOURCES | HOW TO GET A COPY |
|---|---|
| The Practice of Watershed Protection by Thomas R. Shchuler and Heather K. Holland | Center for Watershed Protection<br>8391 Main Street<br>Ellicott City, MD 21043<br>410-461-8323<br>www.cwp.org |
| Urban Runoff Quality Management, American Society of Civil Engineers (ASCE) Manual and Report on Engineering Practice No. 87/Water Environment Federation (WEF) Manual of Practice No.23, 1998. | |
| Urban Storm Drainage, Criteria Manual – Volume 3, Best Management Practices (1999)<br><br>Presents guidance for designing BMPs | Urban Drainage and Flood Control District<br>2480 West 26th Avenue, Suite 156-B<br>Denver, CO 80211<br>303-455-6277 |

**ATTACHMENT C**
**Orange County Sanitation District, Guidelines for Preventing Sewer Discharge of Surface Runoff through Wash Pads**

**Purpose and Scope**

These guidelines are established pursuant to Section 203 of the Districts' Wastewater Discharge Regulations (Ordinance) as amended February 7, 1992. Section 203 provides that

No person shall discharge groundwater, surface runoff, or subsurface drainage to the Districts' sewerage facilities except as provided herein. Pursuant to section 305, et. Seq., the Districts may approve the discharge of such water only when no alternate method of disposal is reasonably available or to mitigate an environmental risk or health hazard.

The Guidelines presented herein are intended for the implementation of this policy as it applies to preventing surface runoff from entering the Districts' sewerage system through exposed wash pads.

**Application**

Two sources from which surface runoff can potentially enter the Districts' sewerage system are the exposed area around the wash pad and the wash pad itself.

Exposed Area Around the Wash Pad: Appropriate measures must be taken to insure that surface runoff from the exposed area around the wash pad (e.g. parking lot, storage areas) does not enter the sewer. Surface runoff must be directed away from the sewer. Appropriate measures include grading the open area to redirect surface runoff to the storm drain; berming around the wash pad; or trenching around the wash pad with grating over the trench, and directing the collected water to a storm drain in accordance with stormwater discharge requirements.

The Wash Pad: Appropriate measures must be taken to insure that surface runoff from the wash pad itself does not enter the sewer. Provided that local regulations are satisfied, roofing will be required for all exposed wash pads, which have a total area exceeding 150 square feet. If the roof structure does not include walls, then the roofs overhang must extend a minimum of 20 percent of the roofs height. All roof drains must be routed to a storm drain.

Where rooting of exposed areas is infeasible or prohibited by local regulations, the Districts may accept the use of an automated surface runoff diversion system. [Note: This diversion system will not substitute for the appropriate measures cited above for surface runoff from the exposed area around the wash pad]. In cases where a diversion system is installed, only the first 0.1-inch of rainwater will be allowed to enter the sewer. After the first 0.1 inch of rainfall, excess rainwater must be diverted to an appropriate drainage system by use of an automated diversion system. The diversion system is subject to acceptance by the Districts. Manual methods of diversion (e.g. manual gates, removable plugs) are not acceptable. Companies are responsible for maintaining the automated diversion system in proper operating condition to ensure that no excess surface runoff from the wash pad is discharged to the sewer.

## ATTACHMENT D

## ASCE/EPA Technical Memorandum titled "Development of Performance Measures"

## ATTACHMENT E – DEFINITIONS

***"Attached Residential Development"*** means any development that provides 10 or more residential units that share an interior/exterior wall. This category includes, but is not limited to: dormitories, condominiums and apartments.

**"*Automotive Repair Shop*"** means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.

***"Commercial and Industrial Development"*** means any development on private land that is not exclusively heavy industrial or residential uses. The category includes, but is not limited to: mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses, hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities, automotive dealerships, commercial airfields, and other light and heavy industrial complexes or facilities.

**"Commercial and Industrial Development greater than 100,000 square feet"** means any commercial or industrial development with a project footprint of at least 100,000 square feet.

***"Detached Residential Development"*** means any development that provides 10 or more freestanding residential units. This category includes, but is not limited to: detached homes, such as single-family homes and detached condominiums.

**"*Directly Connected Impervious Area (DCIA)*"** means the area covered by a building, impermeable pavement, and/ or other impervious surfaces, which drains directly into the storm drain without first flowing across permeable vegetated land area (e.g., lawns).

***"Environmentally Sensitive Areas"*** means areas that include, but are not limited to, all Clean Water Act 303(d) impaired water bodies ("303[d] water bodies"); areas designated as an "Area of Special Biological Significance" (ASBS) by the State Water Resources Control Board (1990 Water Quality Control Plan for Ocean Waters of California [Ocean Plan] and Water Quality Control Plan for the San Diego Basin (1994) and amendments); water bodies designated as having a RARE beneficial use by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (1994) and amendments), or areas designated as preserves or their equivalent under the Multiple Species Conservation Program (MSCP) within the Cities and County of Orange. The limits of Areas of Special Biological Significance are those defined in the 1990 Water Quality Control Plan for Ocean Waters of California (Ocean Plan) and the Water Quality Control Plan for the San Diego Basin (1994 and amendments). Environmentally sensitive area is defined for the purposes of implementing WQMP requirements, and does not replace or supplement other environmental resource-based terms, such as "Environmentally Sensitive Lands," employed by Permittees in their land development review processes. As appropriate, Permittees should distinguish between environmentally sensitive area and other similar terms in their local WQMP's.

***"Hillside"*** means lands that have a natural gradient of 25 percent (4 feet of horizontal distance for every 1 foot of vertical distance) or greater and a minimum elevation differential of 50 feet, or a natural gradient of 200 percent (1 foot of horizontal distance for every 2 feet of vertical distance) or greater and a minimum elevation differential of 10 feet.

***"Hillside development greater than 5,000 square feet"*** means any development that would create more than 5,000 square feet of impervious surfaces in hillsides with known erosive soil conditions.

***"Infeasibility Waivers"*** means a Permittee-issued waiver from requirements for Treatment BMPs. The waiver requires a project proponent demonstrate Treatment BMP infeasibility and the Permittee to notify the Executive Officer of the applicable Regional Board of the waiver.

***"Infiltration"*** means the downward entry of water into the surface of the soil.
***"Municipal Storm Drain System"*** means public drainage facilities by which stormwater may be conveyed to Receiving Waters, such as: natural drainages, ditches, roads, streets, constructed channels, aqueducts, storm drains, pipes, street gutters, or catch basins.

***"Natural Flow Regime"*** means the pre-development hydrologic conditions within a stream.

***"New Development"*** means land disturbing activities; structural development, including construction or installation of a building or structure, the creation of impervious surfaces; and land subdivision.

***"Parking Lot"*** means land area or facility for the temporary parking or storage of motor vehicles used personally, or for business or commerce.

***"Projects Discharging to Receiving Waters within Environmentally Sensitive Areas"*** means all development and significant redevelopment that would create 2,500 square feet of impervious surfaces or increase the area of imperviousness of a project site to 10% or more of its naturally occurring condition, and either discharge urban runoff to a receiving water within an environmentally sensitive area (where any portion of the project footprint is located within 200 feet of the environmentally sensitive area), or discharge to a receiving water within an environmentally sensitive area without mixing with flows from adjacent lands (where the project footprint is located more than 200 feet from the environmentally sensitive area).

***"Project Feature"*** means a project component or subpart that in and of itself, meets priority project criteria. For example, a greater than 5000 sq. ft. parking lot within a non-priority project.

***"Project Footprint"*** means the limits of all grading and ground disturbance, including landscaping, associated with a project.

***"Receiving Waters"*** means surface bodies of water, that receive discharges from new development and redevelopment projects, either directly, or indirectly through municipal storm drain systems. Surface bodies of water include naturally occurring wetlands, streams (perennial, intermittent and ephemeral [exhibiting bed, bank, and ordinary high water mark]), creeks, rivers, reservoirs, lakes, lagoons, estuaries, harbors, bays and the Pacific Ocean. The Permittee shall determine the definition for wetlands and the limits thereof for the purposes of this definition, provided the Permittee definition is as protective as the Federal definition utilized by the United States Army Corps of Engineers (US COE) and the United States Environmental Protection Agency (US EPA). Constructed wetlands for treatment purposes are not considered wetlands under this definition, unless the wetlands were constructed as mitigation for habitat loss. Other constructed BMPs such as detention and retention basins are not considered receiving waters under this definition, unless the BMP was originally constructed within receiving waters.

***"Residential Development"*** means any development on private land that provides living accommodations for one or more persons. This category includes, but is not limited to: single-family homes, multi-family homes, condominiums, and apartments.

***"Restaurant"*** means a stand-alone facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812).

***"Significant Redevelopment"*** means development that would create or add at least 5,000 square feet of impervious surfaces on an already developed site. Significant redevelopment includes, but is not limited to: the expansion of a building footprint; addition to or replacement of a structure; replacement of an impervious surface that is not part of a routine maintenance activity; land disturbing activities related with structural or impervious surfaces and new sidewalk construction, pedestrian ramps, or bike lane on public and private existing roads;. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Significant redevelopment does not include trenching and resurfacing associated with utility work; resurfacing and reconfiguring surface parking lots (if no additional impervious area is added); pedestrian rampsand replacement of damaged pavement.

***"Site Design BMP"*** means any project design feature that reduces the creation or severity of potential pollutant sources or reduces the alteration of the project site's natural flow regime. Redevelopment projects that are undertaken to remove pollutant sources (such as existing surface parking lots and other impervious surfaces) or to reduce the need for new roads and other impervious surfaces (as compared to conventional or low-density new development) by incorporating higher densities and/or mixed land uses into the project design, are also considered Site Design BMPs.

***"Source Control BMP (both structural and non-structural)"*** means land use or site planning practices, or structures that aim to prevent urban runoff and stormwater pollution by reducing the potential for contamination at the source of pollution. Source Control BMPs minimize the contact between pollutants and urban runoff. Examples include roof structures over trash or material storage areas, and berms around fuel dispensing areas.

***"Stormwater Best Management Practice (BMP)"*** means any schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, structural treatment BMPs, and other management practices to prevent or reduce to the maximum extent practicable the discharge of pollutants directly or indirectly to receiving waters. Stormwater BMPs also include treatment requirements, operating procedures and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. This Model WQMP groups stormwater BMPs into the following categories: Site Design, Source Control, and Treatment Control (pollutant removal) BMPs.

***"Streets, Roads, Highways, and Freeways"*** means any project that is not part of a routine maintenance activity, and would create a new paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles. For the purposes of WQMP requirements, Streets, Roads, Highways, and Freeways do not include trenching and resurfacing associated with utility work; applying asphalt overlay to existing pavement; new sidewalk, pedestrian ramps, or bike lane construction on existing roads; and replacement of damaged pavement.

***"Treatment Control (Structural) BMP"*** means any engineered system designed and constructed to remove pollutants from urban runoff. Pollutant removal is achieved by simple gravity settling of particulate pollutants, filtration, biological uptake, media adsorption or any other physical, biological, or chemical process.